

information regarding said user's use of at least a portion of said digital information.

223. A secure method for regulating electronic conduct and commerce characterized by a step of distributing interoperable protected processing environments and circulating amongst plural recipients of said protected processing environments software containers containing digital content and related content control information prepared for use by at least a portion of said protected processing environments, wherein said method includes the further step of regulating the use at least some of said digital content based, at least in part, on the secure processing of at least a portion of said control information through the use of at least one protected processing environment.

224. A secure system for regulating electronic conduct and commerce characterized by:

distributed interoperable protected processing environments,

means for circulating, amongst said protected processing environments, software containers containing digital content and related content control information prepared for use by at least a portion of said protected processing environments, and

means within at least some of the protected processing environments for regulating the use at least some of said digital

content based, at least in part, on the secure processing of at least a portion of said control information.

225. A method of electronic commerce networking for enabling a secure electronic retail environment characterized by the step of supplying user certified control information, smart cards, secure processing units, and retailing terminal arrangements networked together using VDE communication techniques and secure software containers.

226. An electronic commerce networking system for enabling a secure electronic retail environment characterized by:  
means for networking together smart cards, secure processing units, and retailing terminal arrangements; and  
means for making the smart cards, secure processing units, and retailing terminal arrangements interoperable with one another and with VDE communication techniques and secure software containers.

227. A method of enabling electronic commerce appliances for securely administering user rights in commerce activities characterized by the step of providing to users at least a portion of a VDE node contained within a physical device, said device being configured to be compatible with mating connectors in host

systems for supporting secure, interoperable transaction activity between plural parties.

228. A system for securely administering user rights in commerce activities comprising a physical device including at least a portion of a portable VDE node, said device being configured to be compatible with mating connectors in host systems for supporting secure, interoperable transaction activity between plural parties.

229. A method for enabling a programmable, electronic commerce environment characterized by the step of providing to multiple parties secure commerce nodes that securely process separate, modular component billing management methods, budgeting management methods, metering management methods, and related auditing management methods and further characterized by the step of supporting triggering of metering, auditing, billing, and budgeting methods in response to electronic commerce event activities.

230. A programmable, electronic commerce environment characterized by secure commerce nodes each including:

means for securely processing separate, modular component billing management methods, budgeting management

methods, metering management methods, and related auditing management methods, and

means for supporting triggering of metering, auditing, billing, and budgeting methods in response to electronic commerce event activities.

231. An electronic commerce system including modular, standardized control components comprising electronic commerce event control instructions stipulated by commerce participants, and plural electronic appliances containing one or more secure processing units which process at least a portion of such commerce event control instructions, said system further containing one or more databases, operatively connected to at least one of the secure processing units, for at least in part securely storing at least a portion of such control instructions for use by said at least one secure processing unit.

232. In an electronic commerce system including modular, standardized control components comprising electronic commerce event control instructions stipulated by commerce participants, and plural electronic appliances containing one or more secure processing units which process at least a portion of such commerce event control instructions, a method characterized by the step of providing one or more secure databases, operatively connected to at least one of the secure processing units, and at



least in part securely storing, within the secure databases, at least a portion of such control instructions for use by said at least one secure processing unit.

233. A content distribution system comprising plural electronic appliances containing one or more interoperable secure processing units operatively connected to one or more databases for use with at least one of said secure processing units, said one or more databases containing (a) one or more decryption keys for use in decrypting distributed, encrypted digital information, and (b) encrypted audit information, said audit information reflecting at least one aspect of use of said distributed digital information

234. A content distribution method comprising:  
distributing plural electronic appliances containing one or more interoperable secure processing units  
operatively connecting the appliances to one or more databases,  
storing within said one or more databases one or more decryption keys,  
using the decryption keys for decrypting distributed, encrypted digital information, and  
storing within the one or more databases encrypted audit information, said audit information reflecting at least one aspect of use of said distributed digital information.

235. An electronic currency system comprising plural, electronic appliances containing (a) protected processing environments, (b) encrypted electronic currency and related secure control information configured so as to be useable by at least one of said protected processing environments, and (c) usage reporting means for securely communicating electronic currency usage related information from a first interoperable protected processing environment to a second interoperable protected processing environment.

236. An electronic currency method comprising:  
distributing plural, electronic appliances containing (a) protected processing environments, (b) encrypted electronic currency and related secure control information configured so as to be useable by at least one of said protected processing environments, and

securely communicating electronic currency usage related information from a first interoperable protected processing environment to a second interoperable protected processing environment.

237. A method for electronic financial activities characterized by the steps of:

communicating digital containers containing financial information from a first interoperable secure node to a second interoperable secure node, communicating modular, standard control information to said second secure node to, at least in part, set the conditions for use of at least a portion of said financial information, reporting information related to said use to said first interoperable secure node.

238. A system for electronic financial activities characterized by:

means for communicating digital containers containing financial information from a first interoperable secure node to a second interoperable secure node,

means for communicating modular, standard control information to said second secure node,

means at the second node for, at least in part, setting the conditions for use of at least a portion of said financial information, and

means for reporting information related to said use from the second secure node to said first interoperable secure node.

239. A method for electronic currency management including:

communicating encrypted electronic currency from a first, interoperable secure user node to a second interoperable user node using at least one secure container, and

providing secure control information for use with said at least one secure container, said secure control information, at least in part, maintaining conditionally anonymous currency usage information.

240. A system for electronic currency management including:

means for communicating encrypted electronic currency from a first, interoperable secure user node to a second interoperable user node using at least one secure container, and

means for providing secure control information for use with said at least one secure container, said secure control information, at least in part, maintaining conditionally anonymous currency usage information.

241. A method for electronic financial activities management characterized by the steps of:

securely communicating from a first secure node to a second secure node financial information standardized control information for controlling the use of financial information used in a financial value chain,

securely communicating from said first secure node to a third secure node said financial information standardized control information for controlling the use of financial information used in a financial value chain,

securely communicating encrypted financial information from said second secure node to said third secure node, including communicating secure control information, processing said financial information at said third node at least in part through the use of secure control information supplied by said first and said second secure nodes, wherein said standardized control information is at least in part stored in a secure database contained within said third secure node.

242. A system for electronic financial activities management characterized by the steps of:

means coupled to a first and a second secure node for securely communicating from said first secure node to said second secure node financial information standardized control information for controlling the use of financial information used in a financial value chain,

means coupled between the first secure node and a third secure node for securely communicating from said first secure node to said third secure node said financial information standardized control information for controlling the use of financial information used in a financial value chain,

means coupled between the second and third nodes for securely communicating encrypted financial information from said second secure node to said third secure node, including communicating secure control information, and

means at the third node for processing said financial information at said third node at least in part through the use of secure control information supplied by said first and said second secure nodes, and

a secure database at the third node for at least in part storing said standardized control information.

243. A method of information management characterized by the steps of creating at least one smart object at a first location, protecting at least a portion of said smart object including protecting at least one rule and/or control assigned to said smart object, distributing said at least one smart object to at least one second location, securely processing at least a portion of the contents of said at least one smart object at said at least one second location in accordance with at least a portion of at least one said rule and/or control assigned to said smart object.

244. An information management system characterized by:

means for creating at least one smart object at a first location,

means for protecting at least a portion of said smart object including means for protecting at least one rule and/or control assigned to said smart object,

means for distributing said at least one smart object to at least one second location, and

means for securely processing at least a portion of the contents of said at least one smart object at said at least one second location in accordance with at least a portion of at least one said rule and/or control assigned to said smart object.

245. An object processing system comprising at least one secure object containing at least in part protected executable content and at least one at least in part protected rule and/or control associated with operations related to the execution of such content, and at least one secure execution environment for processing the executable content in accordance with at least a portion of at least one of said at least one associated rule and/or control.

246. An object processing method comprising:

providing at least one secure object containing at least in part protected executable content and at least one at least in part protected rule and/or control associated with operations related to the execution of such content,

processing, within at least one secure execution environment, the executable content in accordance with at least a portion of at least one of said at least one associated rule and/or control.

247. A rights distributed database environment including (a) means allowing one or more central authorities to establish control information for use of encrypted digital information, (b) interoperable database management systems at plural user sites for securely storing control information and audit information, (c) secure communication means for securely communicating control information and audit information between user sites, and (d) centralized database means for compiling and analyzing usage information from plural user sites.

248. Within a rights distributed database environment, a method characterized by the following steps:

establishing control information for use of encrypted digital information,

securely storing, within interoperable database management systems at plural user sites, control information and audit information,

securely communicating control information and audit information between user sites, and



compiling and analyzing usage information from plural user sites.

249. A method of distributed database searching characterized by the steps of creating at least one secure object containing search criteria, transmitting at least one such secure object to one or more second locations to perform database searches in accordance with at least one rule and/or control, processing at least one database search based at least in part on the search criteria within a secure object in accordance with at least a portion of at least one of the said at least one associated rule and/or control, storing database search results in the same and/or one or more new secure objects, and transmitting the secure object containing search results to the first location.

250. A method as in claim 247 further characterized by the additional step of associating at least one additional rule and/or control with the search results for establishing at least one condition related to the use of at least one portion of said search results.

251. A system for distributed database searching characterized by:

means for creating at least one secure object containing search criteria,

means for transmitting at least one such secure object to one or more second locations to perform database searches in accordance with at least one rule and/or control,

means for processing at least one database search based at least in part on the search criteria within a secure object in accordance with at least a portion of at least one of the said at least one associated rule and/or control,

means for storing database search results in the same and/or one or more new secure objects, and

means for transmitting the secure object containing search results to the first location.

252. A system as in claim 249 further characterized by means for associating at least one additional rule and/or control with the search results for establishing at least one condition related to the use of at least one portion of said search results.

253. A rights management system comprising protected information, at least two protected processing arrangements, and a rights management language that allows the expression of permitted operations and the consequences of performing such operations on at least a portion of the information processed at least in part by at least one of the protected processing arrangements.

254. A rights management method comprising:  
providing protected information for processing by at least two protected processing arrangements, and  
expressing, in a rights management language, permitted operations and the consequences of performing such operations on at least a portion of the information processed at least in part by at least one of the protected processing arrangements.

255. A method of protecting digital information characterized by the steps of encrypting at least a portion of the information, using a rights management language to describe the conditions related to use of the information, distributing at least a portion of such information and at least a portion of such rights language expressed conditions to one or more recipients, using an electronic appliance arrangement including at least one protected processing arrangement to securely govern at least a portion of the use of such information.

256. A system for protecting digital information characterized by:

means for encrypting at least a portion of the information,  
means for using a rights management language to describe the conditions related to use of the information,

means for distributing at least a portion of such information and at least a portion of such rights language expressed conditions to one or more recipients, and

an electronic appliance arrangement including at least one protected processing arrangement for securely governing at least a portion of the use of such information.

257. A distributed digital information management system comprising software components, a rights management language for expressing processing relationships between two or more of the software components, protected processing means for at least a portion of the software components and at least a portion of the rights management expressions, means for protecting content, means for creating software objects that relate protected content to rights management expressions, and means for delivering protected content, rights management expressions, and such software objects from a providing location to a user's location.

258. A distributed digital information management method comprising:

expressing, in a rights management language, processing relationships between two or more of the software components,

processing, within at least one protected environment, at least a portion of the software components and at least a portion of the rights management expressions,

protecting content,  
creating software objects that relate protected content to  
rights management expressions, and  
delivering protected content, rights management  
expressions, and such software objects from a providing location  
to a user's location.

259. An authentication system comprising at least two  
electronic appliances, at least two digital certificates reflecting  
identity information encrypted using different certifying private  
keys where such certificates are stored in a first electronic  
appliance, communications means for transmitting and receiving  
signals between electronic appliances, means for determining  
compromised and/or expired certifying private keys operatively  
connected to a second electronic appliance, means for the second  
electronic appliance to request transmission of one of the digital  
certificates from the first electronic appliance based at least in  
part on such determination, and means operatively connected to  
such second electronic appliance for decrypting such certificate  
and determining such certificate's validity and/or the validity of  
identity information.

260. In a system comprising at least two electronic  
appliances, an authenticating method comprising:

issuing at least two digital certificates reflecting identification information, including the step of encrypting the two certificates using different certifying private keys, storing the certificates in a first electronic appliance, transmitting and receiving signals between electronic appliances, determining compromised and/or expired certifying private keys operatively connected to a second electronic appliance, requesting, with the second electronic appliance, transmission of one of the digital certificates from the first electronic appliance based at least in part on such determination, decrypting such certificate with the second electronic appliance, and determining such certificate's validity and/or the validity of identity information.

261. An authentication system comprising at least two electronic appliances, at least two digital certificates reflecting identify information encrypted using different certifying private keys where such certificates are stored in a first electronic appliance, communications means for transmitting and receiving signals between electronic appliances, means for a second electronic appliance to request transmission of one of the digital certificates from the first electronic appliance wherein the selection of which certificate is requested is based at least in part

on a random or pseudo-random number, means operatively connected to such second electronic appliance for decrypting such certificate and determining such certificate's validity and/or the validity of identity information.

262. In a system comprising at least two electronic appliances, an authenticating method comprising:

issuing at least two digital certificates reflecting identify information, including the step of encrypting the two digital certificates using different certifying private keys,

storing such certificates in a first electronic appliance, transmitting and receiving signals between electronic appliances,

requesting, with a second electronic appliance, transmission of one of the digital certificates from the first electronic appliance, including the step of selecting a certificate based at least in part on a random or pseudo-random number,

decrypting such certificate with the second electronic appliance; and

determining such certificate's validity and/or the validity of identity information.

263. A method of secure electronic mail characterized by the steps of creating at least one electronic message using an interoperable protected processing environment, encrypting at

least a portion of said at least one message, securely associating one or more sets of control information with one or more messages to set at least one condition for the use of said at least one message, communicating the protected electronic messages to one or more recipients having protected processing environments, securely communicating at least one set of the same or differing control information to each recipient, enabling recipients of both control information and protected messages to use message information at least in part in accordance with the conditions specified by the control information.

264. A system for secure electronic mail including multiple protected processing environments, the system characterized by:

a first protected processing environment for creating at least one electronic message, the first environment including means for encrypting at least a portion of said at least one message, means for securely associating one or more sets of control information with one or more messages to set at least one condition for the use of said at least one message, and means for communicating the protected electronic messages to one or more recipients having interoperable protected processing environments,

means for securely communicating at least one set of the same or differing control information to each recipient, and



means for enabling recipients of both control information and protected messages to use message information at least in part in accordance with the conditions specified by the control information.

265. A method of information management characterized by the steps of protecting content from unauthorized use, securely associating enabling control information with at least a portion of such protected content wherein such enabling control information incorporates information describing how the enabling control information may be redistributed, delivering at least a portion of the protected content to a first user, delivering such enabling control information to such first user, receiving a request to redistribute such enabling control information from such first user, using the description of how enabling control information may be redistributed to create new enabling control information where such new enabling control information may be the same or different than the enabling control information received by such first user, delivering the new enabling control information and/or protected information to a second user.

266. An information management system characterized by:

means for protecting content from unauthorized use,

means for securely associating enabling control information with at least a portion of such protected content, including means for incorporating enabling control information describing how the enabling control information may be redistributed,

means for delivering at least a portion of the protected content to a first user,

means for delivering such enabling control information to such first user,

means for receiving a request to redistribute such enabling control information from such first user,

means for using the description of how enabling control information may be redistributed to create new enabling control information where such new enabling control information may be the same or different than the enabling control information received by such first user, and

means for delivering the new enabling control information and/or protected information to a second user.

267. A method of controlling redistribution of distributed digital information including the steps of encrypting digital information, distributing said encrypted digital information from a first party to a second party, establishing control information regarding the redistribution of at least a portion of said encrypted digital information from said second party to at least one third

party, regulating the redistribution of said at least a portion of said encrypted digital information through the use of a protected processing environment processing said control information.

268. A system for controlling redistribution of distributed digital information including:

means for encrypting digital information,

means for distributing said encrypted digital information from a first party to at least one second party,

means for establishing control information regarding the redistribution of at least a portion of said encrypted digital information from said second party to at least one third party, and

a protected processing environment for processing said control information and for regulating the redistribution of said at least a portion of said encrypted digital information.

269. A method of controlling a robot characterized by the steps of creating instructions for one or more robots, creating a secure container incorporating such instructions, associating control information with such secure container, incorporating at least one secure processing unit into such one or more robots, and performing at least a portion of such instructions in accordance with at least a portion of such control information.

270. A method as in claim 267 further characterized in that such control information includes information describing the conditions under which such instructions may be used and the nature of audit reports required when such instructions are performed.

271. A robot control system characterized by:  
means for creating instructions for one or more robots,  
means for creating a secure container incorporating such instructions,  
means for associating control information with such secure container,  
means for incorporating at least one secure processing unit into such one or more robots, and  
means for performing at least a portion of such instructions in accordance with at least a portion of such control information.

272. A system as in claim 269 further characterized by means for creating such control information, including means for describing the conditions under which such instructions may be used and the nature of audit reports required when such instructions are performed.

273. A method of detecting fraud in electronic commerce characterized by the steps of creating at least one secure

container, associating control information with such one or more containers including control information requiring that audit information be collected and transmitted to an auditing party, delivering such one or more containers and such control information to at least one user, recording information identifying each container and each such user, receiving audit information, creating a profile of usage based at least in part on such received audit information and/or such control information, detecting cases where certain audit information differs at least in part from such profile of usage.

274. A system for detecting fraud in electronic commerce characterized by

means for creating at least one secure container,

means for associating control information with such one or more containers including control information requiring that audit information be collected and transmitted to an auditing party,

means for delivering such one or more containers and such control information to at least one user,

means for recording information identifying each container and each such user,

means for receiving audit information,

means for creating a profile of usage based at least in part on such received audit information and/or such control information, and

means for detecting cases where certain audit information differs at least in part from such profile of usage.

275. A method of detecting fraud in electronic commerce characterized by the steps of distributing at least in part protected digital information to customers, distributing one or more rights to use at least a portion of such digital information across an electronic network, allowing a customer to use at least a part of said at least in part protected digital information through the use of a protected processing environment and at least one of said one or more distributed rights, detecting unusual usage activity related to use of said digital information.

276. A system for detecting fraud in electronic commerce characterized by

means for distributing at least in part protected digital information to customers,

means for distributing one or more rights to use at least a portion of such digital information across an electronic network,

a protected processing environment for allowing a customer to use at least a part of said at least in part protected

digital information through at least one of said one or more distributed rights, and

means for detecting unusual usage activity related to use of said digital information.

277. A programmable component arrangement comprising a tamper resistant processing environment including a microprocessor, memory, a task manager, memory manager and external interface controller, means for loading arbitrary components at least in part into the memory, means for initiating one or more tasks associated with processing such components, means for certifying the validity, integrity and/or trustedness of such components, means for creating arbitrary components, means for associating arbitrary events with such created components, means for certifying the validity, integrity and/or trustedness of such created components, and means for securely delivering such created components.

278. In a programmable component arrangement comprising a tamper resistant processing environment including a microprocessor, memory, a task manager, memory manager and an external interface controller, a processing method characterized by the following steps:

creating arbitrary components,

associating arbitrary events with such created components,

loading the arbitrary components at least in part into the memory,  
initiating one or more tasks associated with processing such loaded components,  
certifying the validity, integrity and/or trustedness of such created components, and  
securely delivering such created components.

279. A distributed, protected, programmable component arrangement comprising at least two tamper resistant processing environments including a microprocessor, memory, a task manager, memory manager and external interface controller, means for loading arbitrary components at least in part into the memory, means for initiating one or more tasks associated with processing such components, and means for certifying the validity, integrity and/or trustedness of such components, said arrangement further comprising means for creating arbitrary components, means for associating arbitrary events with such created components, means for certifying the validity, integrity and/or trustedness of such created components, means for securely delivering such created components between at least two of said at least two tamper resistant processing environments.

280. In a distributed, protected, programmable component arrangement comprising at least two tamper resistant processing



environments including a microprocessor, memory, a task manager, memory manager and external interface controller, a method comprising

- creating arbitrary components,
- certifying the validity, integrity and/or trustedness of such components,

- loading arbitrary components at least in part into the memory,

- initiating one or more tasks associated with processing such components,

- associating arbitrary events with such created components,
- and

- securely delivering such created components between at least two of said at least two tamper resistant processing environments.

281. An electronic appliance comprising at least one CPU, memory, at least one system bus, at least one protected processing environment, and at least one of a Rights Operating System or Rights Operating System layer associated with a host operating system.

282. An operating system comprising at least one task manager, at least one memory manager, at least one input/output manager, at least one protected processing environment, means

for detecting events, means for associating events with rights control functions, means for performing rights control functions at least in part within such one or more protected processing environments.

283. In an operating system comprising at least one task manager, at least one memory manager, at least one input/output manager, at least one protected processing environment, an operating method comprising:

detecting events,  
associating events with rights control functions, and  
performing rights control functions at least in part within such one or more protected processing environments.

284. A method of business automation characterized by the steps of creating one or more secure containers including accounting and/or other administrative information, associating control information with such one or more secure containers including a description of (a) the one or more parties to whom the container may and/or must be delivered and/or (b) the operations that one or more parties may and/or must perform with respect to such accounting and/or other administrative information, delivering one or more of such containers to one or more parties, and enabling the description and/or enforcement of at least a portion of such control information prior, during and/or

subsequent to use of such accounting and/or other administrative information by one or more parties.

285. A method as in claim 282 where such control information further includes at least one requirement that audit information be collected and delivered to one or more auditing parties, and further includes the step of delivering at least a portion of such audit information to one or more parties.

286. A method as in claim 283 where at least a portion of such audit information is automatically processed by at least one of such auditing parties, and further includes the step of transmitting further accounting, administrative and/or audit information to one or more parties that may be the same and/or differ from the one or more parties from whom audit information was received based at least in part on the receipt and/or content of such received audit information.

287. A method as in claim 282 where at least two of such parties are associated with different businesses and/or other organizations and such control information includes information that at least in part describes an accounting, administrative, reporting and/or other audit relationship between such businesses and/or other organizations.

288. A method as in claim 282, 283, 284, or 285 where some or all of such accounting and/or other administrative information is included in such control information.

289. A business automation system characterized by:

means for creating one or more secure containers including accounting and/or other administrative information,

means for associating, with such one or more secure containers, control information including a description of (a) the one or more parties to whom the container may and/or must be delivered and/or (b) the operations that one or more parties may and/or must perform with respect to such accounting and/or other administrative information,

means for delivering one or more of such containers to one or more parties, and

means for enabling the description and/or enforcement of at least a portion of such control information prior, during and/or subsequent to use of such accounting and/or other administrative information by one or more parties.

290. A system as in claim 287 where the associating means further includes means for associating at least one requirement that audit information be collected and delivered to one or more auditing parties, and the delivering means includes

means for delivering at least a portion of such audit information to one or more parties.

291. A system as in claim 288 further including means for automatically processing at least a portion of such audit information, and the system further includes means for transmitting further accounting, administrative and/or audit information to one or more parties that may be the same and/or differ from the one or more parties from whom audit information was received based at least in part on the receipt and/or content of such received audit information.

292. A system as in claim 287 where at least two of such parties are associated with different businesses and/or other organizations and the associating means includes means for generating control information including information that at least in part describes an accounting, administrative, reporting and/or other audit relationship between such businesses and/or other organizations.

293. A system as in claim 286, 287, 288, or 290 where some or all of such accounting and/or other administrative information is included in such control information.

294. A method of distributing content characterized by the steps of creating one or more first secure containers, associating control information with such first containers including information describing the conditions under which some or all of the content of such first containers may be extracted, delivering at least a portion of such first containers and such control information to one or more parties, detecting a request by one or more of such parties to extract some or all of the content of such first containers, determining if such request is permitted in whole or in part by such control information, to the extent permitted by such control information creating one or more second secure containers in accordance with such request and such control information, associating control information with such one or more second secure containers based at least in part on control information associated with such first containers.

295. A system for distributing content characterized by:  
means for creating one or more first secure containers,  
means for associating control information with such first containers including information describing the conditions under which some or all of the content of such first containers may be extracted,  
means for delivering at least a portion of such first containers and such control information to one or more parties,

means for detecting a request by one or more of such parties to extract some or all of the content of such first containers,

means for determining if such request is permitted in whole or in part by such control information, to the extent permitted by such control information creating one or more second secure containers in accordance with such request and such control information, and

means for associating control information with such one or more second secure containers based at least in part on control information associated with such first containers.

296. A method of distributing content characterized by the steps of creating one or more first secure containers, associating control information with such first secure containers including information describing the conditions under which such first secure containers (a) may in whole or in part be embedded into and/or securely associated with one or more second secure containers and/or (b) may allow one or more secure containers to be in whole or in part embedded into and/or securely associated with such first secure containers, delivering at least a portion of such first secure containers and such control information to one or more parties, detecting a request by one or more of such parties or by additional parties to (a) in whole or in part embed into and/or securely associate with such first containers one or

more second containers and/or (b) in whole or in part embed into and/or securely associate with a secure container such first secure containers, determining if such request is permitted by control information, to the extent permitted by control information performing one or more embedding and/or secure association operations, to the extent required by control information and/or requested by one or more of such parties, modifying and/or creating new control information at least in part as a consequence of such one or more embedding and/or secure association operations.

297. A system for distributing content characterized by means for creating one or more first secure containers, means for associating control information with such first secure containers including information describing the conditions under which such first secure containers (a) may in whole or in part be embedded into and/or securely associated with one or more second secure containers and/or (b) may allow one or more secure containers to be in whole or in part embedded into and/or securely associated with such first secure containers, means for delivering at least a portion of such first secure containers and such control information to one or more parties, means for detecting a request by one or more of such parties to (a) in whole or in part embed into and/or securely associate with such first containers one or more second



containers and/or (b) in whole or in part embed into and/or securely associate with a secure container such first secure containers, and

means for determining if such request is permitted by control information, to the extent permitted by control information performing one or more embedding and/or secure association operations, to the extent required by control information and/or requested by one or more of such parties, modifying and/or creating new control information at least in part as a consequence of such one or more embedding and/or secure association operations.

298. A method of distributing information characterized by the steps of protecting information from unauthorized use, associating control information with such protected information, delivering at least a portion of such protected information to one or more parties using plural pathways, delivering at least a portion of such control information to one or more parties using the same or different plural pathways, enabling at least one of such parties to make at least some use of such protected information delivered using a first pathway in accordance with control information at least a portion of which is delivered using a second pathway.

299. A method as in claim 296 in which at least one of such pathways of delivering protected information and/or control information is described by such control information.

300. A system for distributing information characterized by:

means for protecting information from unauthorized use,

means for associating control information with such protected information,

means for delivering at least a portion of such protected information to one or more parties using plural pathways,

means for delivering at least a portion of such control information to one or more parties using the same or different plural pathways,

means for enabling at least one of such parties to make at least some use of such protected information delivered using a first pathway in accordance with control information at least a portion of which is delivered using a second pathway.

301. A system as in claim 298 wherein the delivering means includes means for delivering, over at least one of such pathways, protected information and/or control information described by such control information.

302. A method of distributing information characterized by the steps of protecting information from unauthorized use, associating control information with such protected information including information requiring the collection of audit information, enabling one or more parties to receive and/or process audit information, delivering at least a portion of such protected information and such control information to one or more parties, enabling at least some use of such protected information in accordance with at least a portion of such control information that requires the collection of audit information, delivering such audit information to one or more of such enabled auditing parties different from such delivering party or parties.

303. A method as in claim 300 in which at least one of such auditing parties is specified in such control information.

304. A system for distributing information characterized by means for protecting information from unauthorized use, means for associating control information with such protected information including information requiring the collection of audit information, means for enabling one or more parties to receive and/or process audit information,

means for delivering at least a portion of such protected information and such control information to one or more parties,

means for enabling at least some use of such protected information in accordance with at least a portion of such control information that requires the collection of audit information, and

means for delivering such audit information to one or more of such enabled auditing parties different from such delivering party or parties.

305. A system as in claim 302 in which at least one of such auditing parties is specified in such control information.

306. A secure component-based operating process including:

- (a) retrieving at least one component;
- (b) retrieving a record that specifies a component assembly;
- (c) checking said component and/or said record for validity;
- (d) using said component to form said component assembly in accordance with said record; and
- (e) performing a process based at least in part on said component assembly.

307. A process as in claim 304 wherein said step (c) further comprises executing said component assembly.

308. A process as in claim 304 wherein said component comprises executable code.

309. A process as in claim 304 wherein said component comprises a load module.

310. A process as in claim 304 wherein:  
said record comprises:  
(i) directions for assembling said component assembly;  
and  
(ii) information that at least in part specifies a control;  
and  
said process further comprises controlling said step (d)  
and/or said step (e) based at least in part on said control.

311. A process as in claim 304 wherein said component has a security wrapper, and said controlling step comprises selectively opening said security wrapper based at least in part on said control.

312. A process as in claim 304 wherein:  
said permissions record includes at least one decryption key; and  
said controlling step includes controlling use of said decryption key.

313. A process as in claim 304 including performing at least two of said steps (a) and (e) within a protected processing environment.

314. A process as in claim 304 including performing at least two of said steps (a) and (e) at least in part within tamper-resistant hardware.

315. A method as in claim 304 wherein said performing step (e) includes metering usage.

316. A method as in claim 304 wherein said performing step (e) includes auditing usage.

317. A method as in claim 304 wherein said performing step (e) includes budgeting usage.

318. A secure component operating system process including:

- receiving a component;
- receiving directions specifying use of said component to form a component assembly;
- authenticating said received component and/or said directions;

forming, using said component, said component assembly based at least in part on said received directions; and using said component assembly to perform at least one operation.

319. A method comprising performing the following steps within a secure operating system environment:

providing code;  
providing directions specifying assembly of said code into an executable program;  
checking said received code and/or said assembly directors for validity; and  
in response to occurrence of an event, assembling said code in accordance with said received assembly directions to form an assembly for execution.

320. A method for managing at least one resource with a secure operating environment, said method comprising:

securely receiving a first control from a first entity external to said operating environment;  
securely receiving a second control from a second entity external to said operating environment, said second entity being different from said first entity;  
securely processing, using at least one resource, a data item associated with said first and second controls; and

securely applying said first and second controls to manage said resource for use with said data item.

321. A method for securely managing at least one operation on a data item performed at least in part by an electronic arrangement, said method comprising:

- (a) securely delivering a first procedure to said electronic arrangement;
- (b) securely delivering, to said electronic arrangement, a second procedure separable or separate from said first procedure;
- (c) performing at least one operation on said data item, including using said first and second procedures in combination to at least in part securely manage said operation; and
- (d) securely conditioning at least one aspect of use of said data item based on said delivering steps (a) and (b) having occurred.

322. A method as in claim 319 including performing said delivering step (b) at a time different from the time said delivering step (a) is performed.

323. A method as in claim 319 wherein said step (a) includes delivering said first procedure from a first source, and said step (b) includes delivering said second procedure from a second source different from said first source.



324. A method as in claim 319 further including ensuring the integrity of said first and second procedures.

325. A method as in claim 319 further including validating each of said first and second procedures.

326. A method as in claim 319 further including authenticating each of said first and second procedures.

327. A method as in claim 319 wherein said using step (c) includes executing at least one of said first and second procedures within a tamper-resistant environment.

328. A method as in claim 319 wherein said step (c) includes the step of controlling said data item with at least one of said first and second procedures.

329. A method as in claim 319 further including establishing a relationship between at least one of said first and second procedures and said data item.

330. A method as in claim 319 further including establishing correspondence between said data item and at least one of said first and second procedures.

331. A method as in claim 319 wherein said delivering step (b) comprises delivering at least one load module encrypted at least in part.

332. A method as in claim 329 wherein said delivering step (a) comprises delivering at least one further load module encrypted at least in part.

333. A method as in claim 319 wherein said delivering step (b) comprises delivering at least one content container carrying at least in part secure control information.

334. A method as in claim 319 wherein said delivering step (b) comprises delivering a control method and at least one further method.

335. A method as in claim 319 wherein said delivering step (a) includes:

- encrypting at least a portion of said first procedure,
- communicating said at least in part encrypted first procedure to said electronic arrangement,
- decrypting at least a portion of said first procedure at least in part using said electronic arrangement, and
- validating said first procedure with said electronic arrangement.

336. A method as in claim 319 wherein said delivering step (b) includes delivering at least one of said first and second procedures within an administrative object.

337. A method as in claim 319 wherein said delivering step (b) includes codelivering said second procedure in at least in part encrypted form with said data item.

338. A method as in claim 319 wherein said performing step includes metering usage.

339. A method as in claim 319 wherein said performing step includes auditing usage.

340. A method as in claim 319 wherein said performing step includes budgeting usage.

341. A method for securely managing at least one operation performed at least in part by a secure electronic appliance, comprising:

(a) selecting an item that is protected with respect to at least one operation;

(b) securely independently delivering plural separate procedures to said electronic appliance;

(c) using said plural separate procedures in combination to at least in part securely manage said operation with respect to said selected item; and

(d) conditioning successful completion of said operation on said delivering step (b) having occurred.

342. A method for processing based on deliverables comprising:

securely delivering a first piece of code defining a first part of a process;

separately, securely delivering a second piece of code defining a second part of said process;

ensuring the integrity of the first and second delivered pieces of code; and

performing said process based at least in part on said first and second delivered code pieces.

343. A method as in claim 340 wherein a first piece of code for said process at least in part controls decrypting content.

344. A method as in claim 340 wherein said ensuring step includes validating said first and second pieces of code.

345. A method as in claim 340 wherein said ensuring step includes validating said first and second pieces of code relative to one another.

346. A method as in claim 340 wherein said performing step includes metering usage.

347. A method as in claim 340 wherein said performing step includes auditing activities.

348. A method as in claim 340 wherein said performing step includes budgeting usage.

349. A method as in claim 340 wherein said performing step includes electronically processing content based on electronic controls.

350. A method of securely controlling at least one protected operation with respect to a data item comprising:

- (a) supplying at least a first control from a first party;
- (b) supplying at least a second control from a second party different from said first party;
- (c) securely combining said first and second controls to form a set of controls;

(d) securely associating said control set with said data item; and

(e) securely controlling at least one protected operation with respect to said data item based on said control set.

351. A method as in claim 348 wherein said data item is protected.

352. A method as in claim 348 wherein at least one of said plural controls includes a control relating to metering at least one aspect of use of said protected data item.

353. A method as in claim 348 wherein at least one of said plural controls include a control relating to budgeting at least one aspect of use of said protected data item.

354. A secure method for combining data items into a composite data item comprising:

(a) securely providing a first data item having at least a first control associated therewith;

(b) securely providing a second data item having at least a second control associated therewith;

(c) forming a composite of said first and second data items;

(d) securely combining said first and second controls into a composite control set; and

(e) performing at least one operation on said composite of said first and second data items based at least in part on said composite control set.

355. A method as in claim 352 wherein said combining step includes preserving each of said first and second controls in said composite set.

356. A method as in claim 352 wherein said performing step comprises governing the operation on said composite of said first and second data items in accordance with said first control and said second control .

357. A method as in claim 352 wherein said providing step includes ensuring the integrity of said association between said first controls and said first data item is maintained during at least one of transmission, storage and processing of said first data item.

358. A method as in claim 352 wherein said providing step comprises delivering said first data item separately from said first control .

359. A method as in claim 352 wherein said providing step comprises codelivering said first data item and said first control .

360. A secure method for controlling a protected operation comprising:

(a) delivering at least a first control and a second control;  
and

(b) controlling at least one protected operation based at least in part on a combination of said first and second controls, including at least one of the following steps:

resolving at least one conflict between said first and second controls based on a predefined order;

providing an interaction with a user to form said combination; and

dynamically negotiating between said first and second controls.

361. A method as in claim 358 wherein said controlling step (b) includes controlling decryption of electronic content.

362. A method as in claim 358 further including:  
receiving protected electronic content from a party; and  
authenticating the identity of said party prior to using said received protected electronic content.



363. A secure method comprising:  
selecting protected data;  
extracting said protected data from an object;  
identifying at least one control to manage at least one  
aspect of use of said extracted data;  
placing said extracted data into a further object; and  
associating said at least one control with said further  
object.

364. A method as in claim 361 further including limiting  
at least one aspect of use of said further object based on said at  
least one control.

365. A secure method of modifying a protected object  
comprising:

- (a) providing a protected object; and
- (b) embedding at least one additional element into said  
protected object without unprotecting said object.

366. A method as in claim 60 further including:  
associating at least one control with said object; and  
limiting usage of said element in accordance with said  
control.

367. A method as in claim 363 further including a permissions record within said object.

368. A method as in claim 364 further including at least in part encrypting said object.

369. A method for managing at least one resource with a secure operating environment, said method comprising:

securely receiving a first load module from a first entity external to said operating environment;

securely receiving a second load module from a second entity external to said operating environment, said second entity being different from said first entity;

securely processing, using at least one resource, a data item associated with said first and second load modules; and

securely applying said first and second load modules to manage said resource for use with said data item.

370. A method for negotiating electronic contracts, comprising:

receiving a first control set from a remote site;

providing a second control set;

performing, within a protected processing environment, an electronic negotiation between said first control set and said

second control set, including providing interaction between said first and second control sets; and

producing a negotiated control set resulting from said interaction between said first and second control sets.

371. A system for supporting electronic commerce including:

means for creating a first secure control set at a first location;

means for creating a second secure control set at a second location;

means for securely communicating said first secure control set from said first location to said second location; and

means at said second location for securely integrating said first and second control sets to produce at least a third control set comprising plural elements together comprising an electronic value chain extended agreement.

372. A system for supporting electronic commerce including:

means for creating a first secure control set at a first location;

means for creating a second secure control set at a second location;

means for securely communicating said first secure control set from said first location to said second location; and

negotiation means at said second location for negotiating an electronic contract through secure execution of at least a portion of said first and second secure control sets.

373. A system as in claim 370 further including means for controlling use by a user of protected information content based on at least a portion of said first and/or second control sets.

374. A system as in claim 370 further including means for charging for at least a part of said content use.

375. A secure component-based operating system including:

component retrieving means for retrieving at least one component;

record retrieving means for retrieving a record that specifies a component assembly;

checking means, operatively coupled to said component retrieving means and said record retrieving means, for checking said component and/or said record for validity;

using means, coupled to said checking means, for using said component to form said component assembly in accordance with said record; and

performing means, coupled to said using means, for performing a process based at least in part on said component assembly.

376. A secure component-based operating system including:

a database manager that retrieves, from a secure database, at least one component and at least one record that specifies a component assembly;

an authenticating manager that checks said component and/or said record for validity;

a channel manager that uses said component to form said component assembly in accordance with said record; and

an execution manager that performs a process based at least in part on said component assembly.

377. A secure component operating system including:

means for receiving a component;

means for receiving directions specifying use of said component to form a component assembly;

means, coupled to said receiving means, for authenticating said received component and/or said directions;

means, coupled to said authenticating means, for forming, using said component, said component assembly based at least in part on said received directions; and

means, coupled to said forming means, for using said component assembly to perform at least one operation.

378. A secure component operating environment including:

a storage device that stores a component and directions specifying use of said component to form a component assembly;

an authenticating manager that authenticates said component and/or said directions;

a channel manager that forms, using said component, said component assembly based at least in part on said directions; and

a channel that executes said component assembly to perform at least one operation.

379. A secure operating system environment comprising:

a storage device that stores code and directions specifying assembly of said code into an executable program;

a validating device that checks said received code and/or said assembly directors for validity; and

an event-driven channel that, in response to occurrence of an event, assembles said code in accordance with said assembly directions to form an assembly for execution.

380. A secure operating environment system for managing at least one resource comprising:

a communications arrangement that securely receives a first control from a first entity external to said operating environment, and securely receives a second control from a second entity external to said operating environment, said second entity being different from said first entity; and

a protected processing environment, coupled to said communications arrangement, that:

(a) securely processes, using at least one resource, a data item associated with said first and second controls, and

(b) securely applies said first and second controls to manage said resource for use of said data item.

381. A system for negotiating electronic contracts, comprising:

a storage arrangement that stores a first control set received from a remote site, and stores a second control set;

a protected processing environment, coupled to said storage arrangement, that:

(a) performs an electronic negotiation between said first control set and said second control set,

(b) provides interaction between said first and second control sets, and

(c) produces a negotiated control set resulting from said interaction between said first and second control sets.

382. A system as in claim 379 further including means for electronically enforcing said negotiated control set.

383. A system as in claim 379 further including means for generating an electronic contract based on said negotiated control set.

384. A method for supporting electronic commerce including:

creating a first secure control set at a first location;

creating a second secure control set;

electronically negotiating, at said location different from said first location, an electronic contract, including the step of securely executing at least a portion of said first and second control sets.

385. An electronic appliance comprising:

a processor; and

at least one memory device connected to said processor;

wherein said processor includes:

retrieving means for retrieving at least one component, and at least one record that specifies a component assembly, from said memory device,

checking means coupled to said retrieving means for checking said component and/or said record for validity, and



using means coupled to said retrieving means for using said component to form said component assembly in accordance with said record.

386. An electronic appliance comprising:

at least one processor;

at least one memory device connected to said processor;

and

at least one input/output connection operatively coupled to said processor,

wherein said processor at least in part executes a rights operating system to provide a secure operating environment within said electronic appliance.

387. An electronic appliance as in claim 384 wherein said processor includes means for providing a channel, said channel assembling independently deliverable components into a component assembly and executing said component assembly.

388. An electronic appliance as in claim 384 further including a secondary storage device coupled to said processor, said secondary storage device storing a secure database, said processor including means for decrypting information obtained from said secure database and for encrypting information to be written to said secure database.

389. An electronic appliance as in claim 384 wherein said processor and said memory device are disposed in a secure, tamper-resistance encapsulation.

390. An electronic appliance as in claim 384 wherein said processor includes a hardware encryptor/decryptor.

391. An electronic appliance as in claim 384 wherein said processor includes a real time clock.

392. An electronic appliance as in claim 384 wherein said processor includes a random number generator.

393. An electronic appliance as in claim 384 wherein said memory device stores audit information.

394. A method for auditing the use of at least one resource with a secure operating environment, said method comprising:

securely receiving a first control from a first entity external to said operating environment;

securely receiving a second control from a second entity external to said operating environment, said second entity being different from said first entity;

using at least one resource;

securely sending to said first entity in accordance with said first control, first audit information concerning use of said resource; and

securely sending to said second entity in accordance with said second control, second audit information concerning use of said resource, said second audit information being at least in part different from said first audit information.

395. A method for auditing the use of at least one resource with a secure operating environment, said method comprising:

securely receiving first and second control alternatives from an entity external to said operating environment;

selecting one of said first and second control alternatives; using at least one resource;

if said first control alternative is selected by said selecting step, securely sending to said entity in accordance with said first control alternative, first audit information concerning use of said resource; and

if said second control alternative is selected by said selecting step, securely sending to said second entity in accordance with said second control alternative, second audit information concerning use of said resource, said second audit information being at least in part different from said first audit information.

396. A method and/or system for enabling a sale of protected digital information that has been previously distributed to users, the method or system being characterized by a secure element that selectively controls access to the protected digital information based on electronic controls associated with the information.

397. A distributed, secure electronic point of sale system or method characterized by a secure processing element for selectively releasing goods and/or services in exchange for compensation.

398. In a distributed digital network, an advertising method characterized by the steps of tracking usage of digital information that has associated with it one or more controls with respect to access to and/or usage of said information; and targeting advertising messages based at least in part on said tracking.

399. A distributed electronic advertising system characterized in that the system uses a distributed network of interoperable protected processing environments to at least in part deliver advertising to users.

400. A distributed, secure, virtual black box comprised of nodes located at VDE content container creators, other content providers, client users, and recipients of secure VDE content usage information) site, the nodes of said virtual black box including a secure subsystem having at least one secure hardware element such as a semiconductor element or other hardware module for securely executing VDE control processes, said secure subsystems being distributed at nodes along a pathway of information storage, distribution, payment, usage, and/or auditing.

401. A protected processing system or method providing multiple currencies and/or payment arrangements for the secure processing and releasing of protected digital information.

402. A distributed secure method or system characterized in that a user's age is used as a criteria for electronically, securely releasing information and/or resources to the user.

403. A method of renting an electronic appliance defining a secure processing environment.

404. A virtual distribution environment providing any one or more of the following features and/or elements and/or combinations thereof:

a configurable protected, distributed event management system; and/or

a trusted, distributed transaction and storage management arrangement; and/or

plural pathways for providing information, for control information, and/or for reporting; and/or

multiple payment methods; and/or

multiple currencies; and/or

EDI; and/or

Electronic banking; and/or

electronic document management; and/or

electronic secure communication; and/or

e-mail; and/or

distributed asynchronous reporting; and/or

combination asynchronous and online management; and/or

privacy control by users; and/or

testing; and/or

using age as a class; and/or

appliance control (renting, etc.); and/or

telecommunications infrastructure; and/or

games management; and/or

extraction of content from an electronic container; and/or

embedding of content into an electronic container; and/or

multiple certificate to allow for breach of a key; and/or

virtual black box; and/or

independence of control information from content; and/or  
multiple, separate, simultaneous control sets for one digital  
information property; and/or

updating control information for already distributed digital  
information; and/or

organization information management; and/or  
coupled external and organization internal chain of  
handling and control; and/or

a content usage consequence management system  
(reporting, payment, etc., multiple directions); and/or

a content usage reporting system providing differing audit  
information and/or reduction going to multiple parties holding  
rights in content; and/or

an automated remote secure object creation system; and/or  
infrastructure background analysis to identify improper  
use; and/or

seniority of control information system; and/or  
secure distribution and enforcement of rules and controls  
separately from the content they apply to; and/or

redistribution management by controlling the rights and/or  
number of copies and or pieces etc. that may be redistributed;  
and/or

an electronic commerce taxation system; and/or

an electronic shopping system; and/or

an electronic catalog system; and/or

a system handling electronic banking, electronic shopping,  
and electronic content usage management; and/or  
an electronic commerce multimedia system; and/or  
a distributed, secure, electronic point of sale system; and/or  
advertising; and/or  
electronics rights management; and/or  
a distributed electronic commerce system; and/or  
a distributed transaction system or environment; and/or  
a distributed event management system; and/or  
a distributed right systems.

405. A Virtual Distribution Environment substantially as  
shown in Figure 1.

406. An "Information Utility" substantially as shown in  
Figure 1A.

407. A chain of handling and control substantially as  
shown in Figure 1.

408. Persistent rules and control information substantially  
as shown in Figure 2A.

409. A method of providing different control information  
substantially as shown in Figure 1.



410. Rules and/or control information substantially as shown in Figure 4.

411. An object substantially as shown in Figures 5A and 5B.

412. A Secure Processing Unit substantially as shown in Figure 6.

413. An electronic appliance substantially as shown in Figure 7.

414. An electronic appliance substantially as shown in Figure 8.

415. A Secure Processing Unit substantially as shown in Figure 9.

416. A "Rights Operating System" ("ROS") architecture substantially as shown in Figure 10.

417. Functional relationship(s) between applications and the Rights Operating System substantially as shown in Figures 11A-11C.

418. Components and component assemblies substantially as shown in Figures 11D-11J.

419. A Rights Operating System substantially as shown in FIGURE 12.

420. A method of objection creation substantially as shown in Figure 12A.

421. A "protected processing environment" software architecture substantially as shown in Figure 13.

422. A method of supporting a channel substantially as shown in Figure 15.

423. A channel header and channel detail record substantially as shown in Figure 15 A.

424. A method of creating a channel substantially as shown in Figure 15B.

425. A secure data base substantially as shown in Figure 16.

426. A logical object substantially as shown in Figure 17.

452. An event method substantially as shown in  
FIGURES 53A-53B.

453. A billing method substantially as shown in FIGURE  
53C.

454. An extract method substantially as shown in  
FIGURE 57A.

455. An embed method substantially as shown in FIGURE  
57A.

456. An obscure method substantially as shown in  
FIGURE 58A.

457. A fingerprint method substantially as shown in  
FIGURE 58B.

458. A fingerprint method substantially as shown in  
FIGURE 58C.

459. A meter method substantially as shown in FIGURE  
6.

460. A key "convolution" process substantially as shown in FIGURE 62.

461. A process of generating different keys using a key convolution process to determine a "true" key substantially as shown in FIGURE 63.

462. A process of initializing protected processing environment keys substantially as shown in FIGURES 64 and/or 65.

463. A process for decrypting information contained within stationary objects substantially as shown in FIGURE 66.

464. A process for decrypting information contained within traveling objects substantially as shown in FIGURE 67.

465. A process for initializing a protected processing environment substantially as shown in FIGURE 68.

466. A process of downloading firmware into a protected processing environment substantially as shown in FIGURE 69.

467. Multiple VDE electronic appliances connected together with a network or other communications means substantially as shown in FIGURE 70.

468. A portable VDE electronic appliance substantially as shown in FIGURE 71.

469. "Pop-up" displays that may be generated by the user notification and exception interface substantially as shown in Figures 72A-72D.

470. A smart object substantially as shown in FIGURE 73.

471. A method of processing smart objects substantially as shown in FIGURE 74.

472. Electronic negotiation substantially as shown in any of FIGURES 75A-75D.

473. An electronic agreement substantially as shown in FIGURES 75E-75F.

474. Electronic negotiation processes substantially as shown in any of FIGURES 76A-76B.

475. A chain of handling and control substantially as shown in FIGURE 77.

476. A VDE "repository" substantially as shown in FIGURE 78.

477. A process of using a chain of handling and control to evolve and transform VDE managed content and control information substantially as shown in any or all of FIGURES 79-83.

478. A chain of handling and control involving several categories of VDE participants substantially as shown in FIGURE 84.

479. A chain of distribution and handling within an organization substantially as shown in FIGURE 85.

480. A chain of handling and control substantially as shown in Figures 86 and/or 86A.

481. A virtual silicon container model substantially as shown in Figure 87.

482. A method of business automation characterized by the steps of (a) creating one or more secure containers including encrypted accounting and/or other administrative information content, (b) associating control information with one or more of such one or more secure containers including a description of (i) the one or more parties whom may use one or more of the one or more containers, and (ii) the operations that will be performed for one or more parties with respect to such accounting and/or other administrative information, (c) electronically delivering one or more of such one or more containers such to one or more parties, and (d) enabling through the use of a protected processing environment the enforcement of at least a portion of such control information.

483. A business automation system characterized by:  
means for providing at least one secure container including administrative information content having control information associated therewith, and  
a protected processing environment for enforcing, at least in part, the control information.

484. A business automation system comprising (a) distributed, interoperable protected processing environment installations, (b) secure containers for distribution of digital

information, (c) control information supporting the automation of chain of handling and control functions.

485. A method of business automation characterized by the steps of providing interoperable protected processing environment nodes to plural parties, communicating first encrypted digital information from a first party to a second party, communicating second encrypted digital information including at least a portion of said first communicated digital information and/or information related to the use of said first digital information, to a third party different from said first or second parties, wherein use of said second encrypted digital information is regulated, at least in part, by an interoperable protected processing environment available to said third party.

486. A business automation system characterized by:  
plural protected processing environment nodes,  
means for communicating digital information between the nodes, and  
wherein at least one of the nodes includes means for regulating the use of said communicated digital information.

487. A method for chain of handling and control characterized by the steps of (a) a first party placing protected digital information into a first software container and stipulating



rules and controls governing use of at least a portion of said digital information, (b) providing said software container to a second party, wherein said second party places said software container into a further software container and stipulates rules and controls for at least in part managing use of at least a portion of said digital information and/or said first software container by a third party.

488. A chain of handling and control system characterized by:

means for placing digital information into a first software container and for stipulating rules and/or controls governing use of at least a portion of said digital information, and

means for placing said software container into a further software container and for stipulating further rules and/or controls for at least in part managing use of at least a portion of said digital information and/or said first software container.

489. A system for chain of handling and control including (a) a first container containing at least in part protected digital information, (b) at least in part protected control information stipulated by a first party establishing conditions for use of at least a portion of said digital content, (c) a second container different from said first container, said second container containing said first container, (d) control information stipulated

and advertising information, (b) means to monitor viewing of at least a portion of said advertising information, (c) means to charge for user viewing of at least a portion of said advertising information, (d) means to securely communicate information based upon said viewing in a secure container, and (e) control information related to said containerized digital information for managing the communication of said information based upon said viewing.

493. A method for electronic advertising characterized by the steps of (a) containerizing digital information including both content and advertising information, (b) monitoring user viewing of at least a portion of said advertising information, (c) charging for user viewing of at least a portion of said advertising information, (d) securely communicating information based upon said viewing in a secure container, and (e) at least in part managing, through the use of control information related to said advertising information, the communication of information based upon said viewing.

494. A method of clearing transaction information characterized by the steps of (a) securely distributing digital information to a first user of an interoperable protected processing environment, (b) securely distributing further digital information to a user of an interoperable protected processing

environment different from said at first user (c) receiving information related to usage of said digital information, (d) receiving information related to usage of said further digital information, and (e) processing information received according to steps (c) and (d) to perform at least one of (I) an administrative, or (II) an analysis, function.

495. A system for clearing transaction information including (a) a first container containing at least in part protected digital information and associated control information, (b) a second secure container containing further at least in part protected digital information and associated control information, (c) means to distribute said first and second containers to users, (d) communication means for communicating information at least in part derived from user usage of said first container digital information, (e) communication means for communicating information at least in part derived from user usage of said second container digital information, (f) processing means at a clearinghouse site for receiving the information communicated through steps (d) and (e), wherein said processing means perform administrative and/or analysis processing of at least a portion of said communicated information.

496. A method for clearinghouse analysis characterized by the steps of: (a) enabling plural independent clearinghouses for

administering and/or analyzing usage of distributed, at least in part protected, digital information, (b) providing interoperable protected processing environments to plural, independent users, and (c) enabling a user to select a clearinghouse for use with an interoperable protected processing environment

497. A system for clearinghouse analysis including (a) plural independent clearinghouses for administering and/or analyzing usage of distributed, at least in part protected, digital information, (b) at least one interoperable protected processing environments at each of plural user locations, (c) selecting means for enabling a user to select one of said plural independent clearinghouse to perform payment and/or analysis functions related to the use of at least a portion of said at least in part protected, digital information.

498. A method of electronic advertising characterized by the steps of

creating one or more electronic advertisements, creating one or more secure containers including at least a portion of such advertisements,

associating control information with such advertisements including control information describing at least one of: (a) reporting at least some advertisement usage information to one or more content providers, advertisers and/or agents, (b)

providing one or more credits to a user based on such user's viewing and/or other usage of such advertisements, (c ) reporting advertisement usage information to one or more market analysts, (d) providing a user with ordering information for and/or means for ordering one or more products and/or services, and/or (e) providing one or more credits to a content provider based on one or more users' viewing and/or other usage of such advertisements,

providing such containers and such control information to one or more users,

enabling such users to use such containers at least in part in accordance with such control information.

499. A system for electronic advertising including (a) means to provide digital information to users for their use, (b) means to provide advertising content to said users in combination with said digital information, (c ) means to audit use of said digital information, (d) means to acquire usage information regarding use of advertising content, (e) means to securely report information based upon said advertising content usage information, and (f) compensating at least one content provider at least in part based upon use of such advertising content.

500. A system for chain of handling and control including (a) a first container containing at least in part protected digital information, (b) at least in part protected control information stipulated by a first party establishing condition for use of at least a portion of said digital content, (c) a second container different from said first container, said second container containing said first container, and (d) control information stipulated independently by a second party for at least in part setting conditions for managing use of the contents of said second container.

501. A method of operating a clearinghouse characterized by the steps of receiving usage information related at least in part to use of secure containers from plural parties, determining payments due to one or more parties based at least in part on such usage information, performing and/or causing to be performed transactions resulting in payments to such parties based at least in part on such determinations.

502. An electronic clearinghouse comprising:  
means for receiving usage information related at least in part to use of secure containers from plural parties,  
means for determining payments due to one or more parties based at least in part on such usage information,

means for performing and/or causing to be performed transactions resulting in payments to such parties based at least in part on such determinations.

503. A method of operating a clearinghouse characterized by the steps of receiving usage information related at least in part to use of secure containers from plural parties, determining reports of usage for one or more parties based at least in part on such usage information, creating and/or causing to be created reports of usage based at least in part on such determination, delivering at least one of such reports to at least one of such parties.

504. A method of operating a clearinghouse characterized by the steps of receiving permissions and/or other control information from one or more content providers including information that enables delivery of at least one right in at least one secure container to other parties, receiving requests from plural parties for one or more rights in one or more secure containers, delivering permissions and/or other control information to such parties based at least in part on such requests.

505. A method of operating a clearinghouse characterized by the steps of receiving information from one or more parties

establishing a party's identity information, creating one or more electronic representations of at least a portion of such identity information for use in enabling and/or withholding at least one right in at least one secure container, performing an operation to certify such electronic representations, delivering such electronic representations to such party.

506. A method of operating a clearinghouse characterized by the steps of receiving a request for credit from a party for use with secure containers, determining an amount of credit based at least in part on such request, creating control information related to such an amount, delivering such control information to such user, receiving usage information related to use of such credit, performing and/or causing to be performed at least one transaction associated with collecting payment from such user.

507. A method for contributing secure control information with respect to an electronic value chain wherein control information is contributed by a party not directly participating in said value chain, comprising steps of: aggregating said contributed control information with control information associated with digital information stipulated by one or more parties in an electronic value chain, said aggregate control information at least in part managing conditions related to the use of at least a portion of said digital information.



508. A method for entering the payment of taxes associated with commercial events wherein secure control information for automatically governing tax payments for said commercial events is contributed by a party comprising steps of: aggregating said secure control information with control information that has been contributed by a separate party and controlling at least one condition for use of digital information.

509. A method for general purpose reusable electronic commerce arrangement characterized by the steps of:

(a) providing component structures, modular methods that can be configured together to comprise event controlled

(b) providing integrateable protected processing environments to plural independent users;

(c) employing secure communications means for communicating digital control information between integrateable protected processing environments; and

(d) enabling database managers operably connected to said processing environments for storing at least a portion of said provided component modular methods.

510. A system for general purpose, reusable electronic commerce including:

(a) component modular methods configured together to comprise event control structures;

(b) at least one interoperable processing environment at each of plural independent user locations;

(c) secure communications means for communicating digital control information between interoperable protected processing environments; and

(d) secured database managers operably connected to said protected processing environments for storing at least a portion of said component modular methods.

511. A general purpose electronic commerce credit system including:

(a) a secure interoperable protected processing environment;

(b) general purpose credit control information for providing credit for user usage of at least in part protected digital information; and

(c) at least in part protected digital information related control information for providing necessary information for employing credit through the use, at least in part, of said general purpose credit control information.

512. A method for enabling a general purpose electronic commerce credit system including:

(a) providing secure interoperable protected processing environments;

(b) supplying general purpose credit control information for providing credit for user usage of at least in part protected digital information; and

(c) providing, at least in part, protected digital information related control information for providing necessary information for employing credit through the use, at least in part, of said general purpose credit control information.

513. A document management system comprising one or more electronic appliances containing one or more SPUs and one or more secure databases operatively connected to at least one of the SPUs.

514. An electronic contract system comprising one or more electronic appliances containing one or more SPUs and one or more secure databases operatively connected to at least one of the SPUs.

515. An electronic appliance containing at least one SPU and at least one secure database operatively connected to at least one of the SPU(s).

516. An electronic appliance containing one or more CPUs where at least one of the CPUs is integrated with at least one SPU.

517. An electronic appliance containing one or more video controllers where at least one of the video controllers is integrated with at least one SPU.

518. An electronic appliance containing one or more network communications means where at least one of the network communications means is integrated with at least one SPU.

519. An electronic appliance containing one or more modems where at least one of the modems is integrated with at least one SPU.

520. An electronic appliance containing one or more CD-ROM devices where at least one of the CD-ROM devices is integrated with at least one SPU.

521. An electronic appliance containing one or more set-top controllers where at least one of the set-top controllers is integrated with at least one SPU.

522. An electronic appliance containing one or more game systems where at least one of the game systems is integrated with at least one SPU.

523. An integrated circuit supporting multiple encryption algorithms comprising at least one microprocessor, memory, input/output means, at least one circuit for encrypting and/or decrypting information and one or more software programs for use with at least one of the microprocessors to perform encryption and/or decryption functions.

524. An integrated circuit comprising at least one microprocessor, memory, at least one real time clock, at least one random number generator, at least one circuit for encrypting and/or decrypting information and independently delivered and/or independently deliverable certified software.

525. An integrated circuit comprising at least one microprocessor, memory, input/output means, a tamper resistant barrier and at least a portion of a Rights Operating System.

526. An integrated circuit comprising at least one microprocessor, memory, input/output means, at least one real time clock, a tamper resistant barrier and means for recording interruption of power to at least one of the real time clocks.

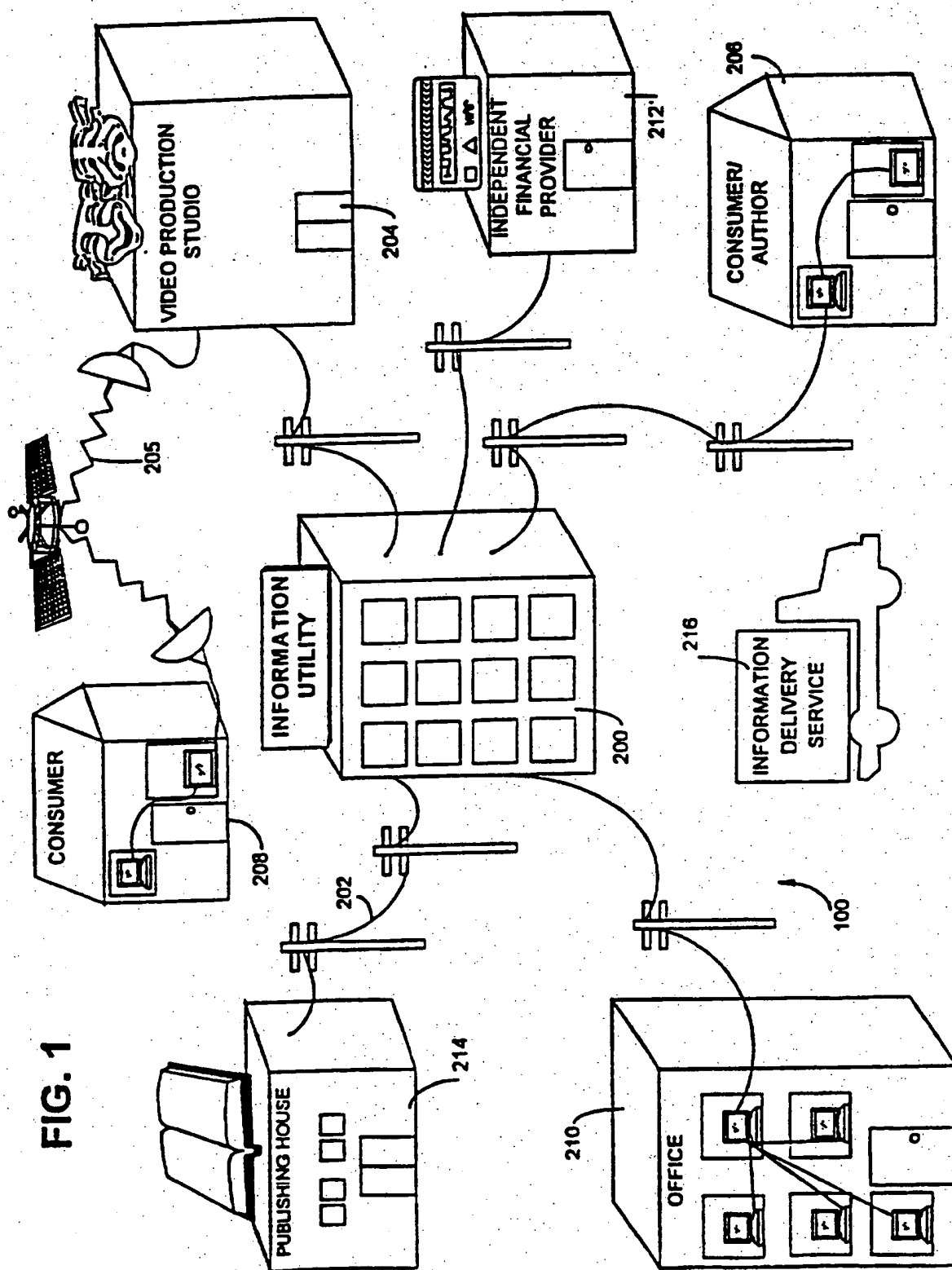


FIG. 1

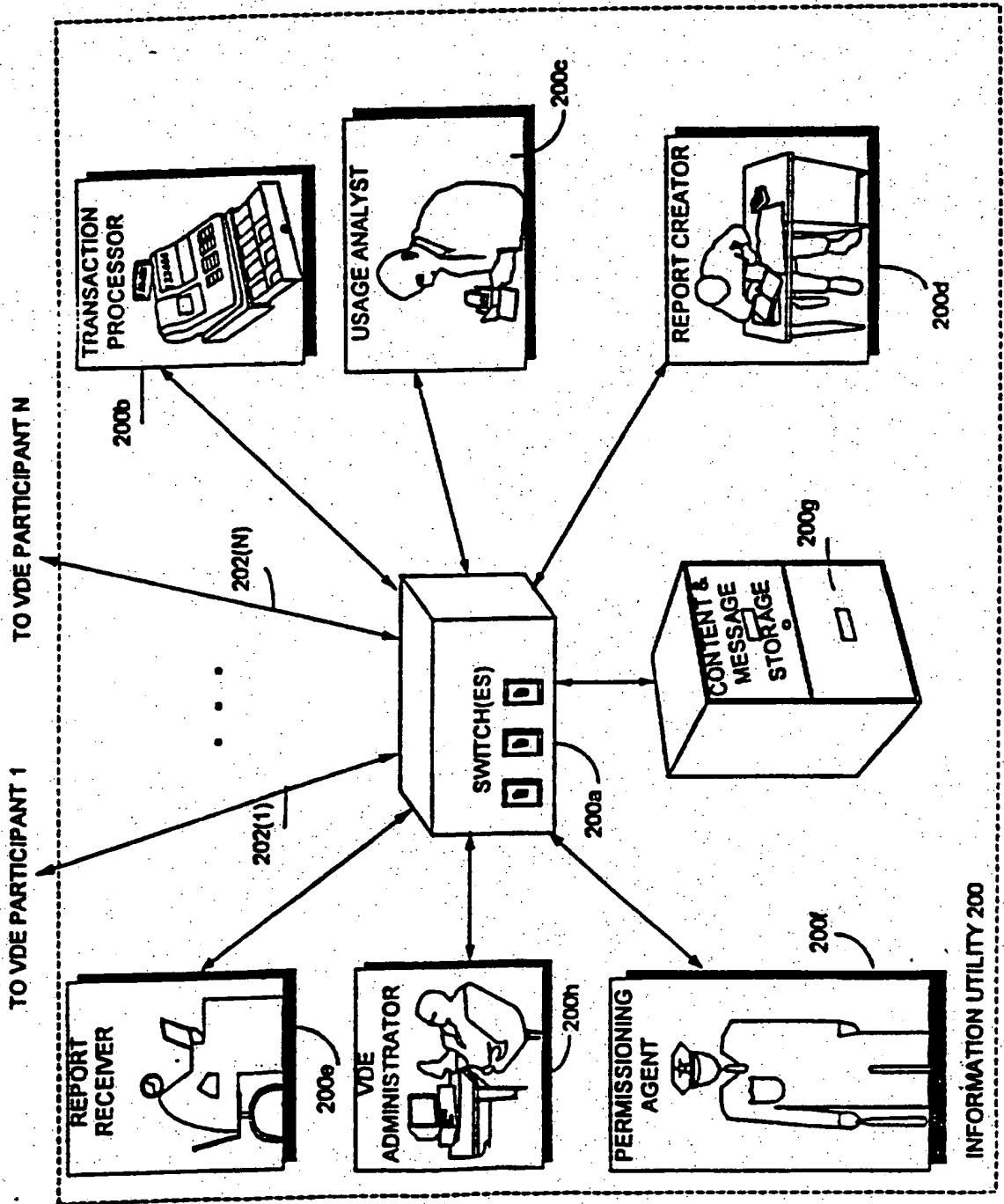


FIG. 1A

FIG. 2

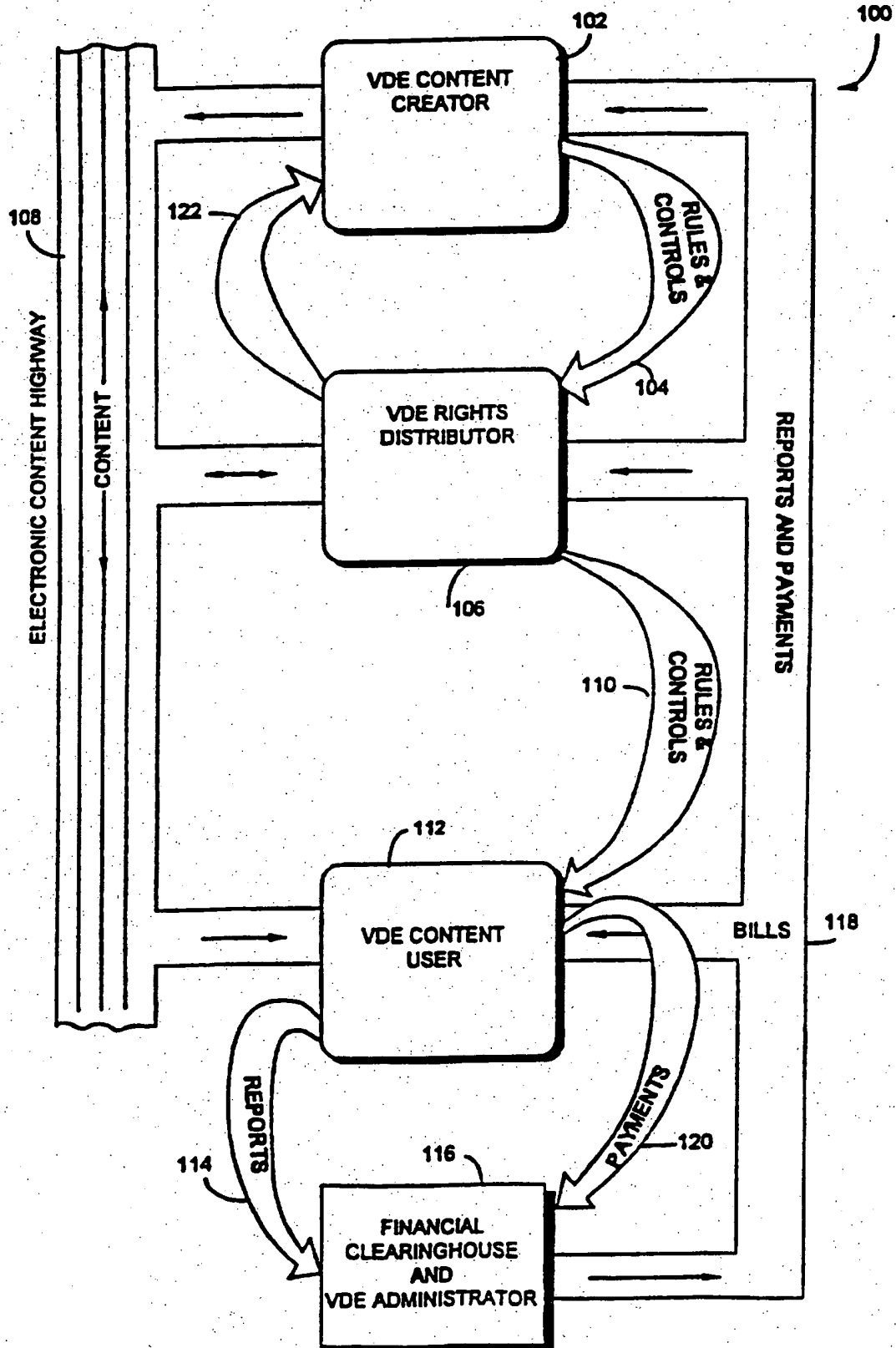




FIG. 2A

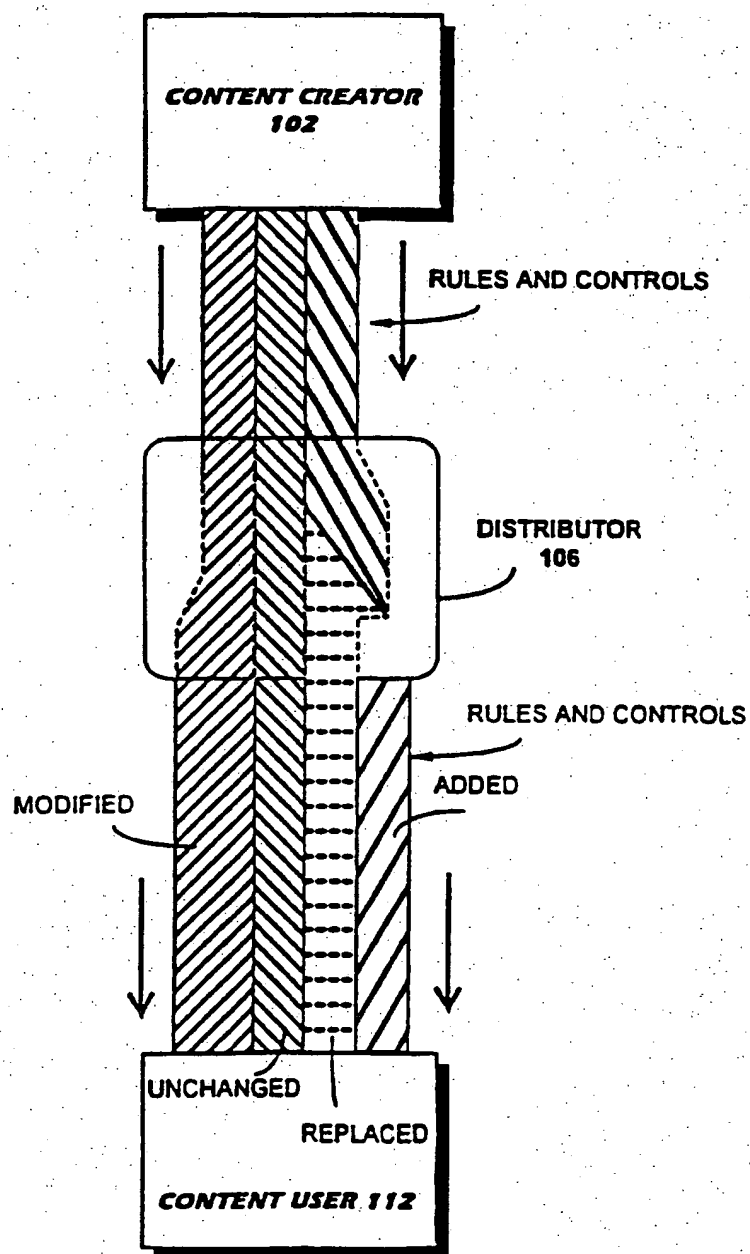
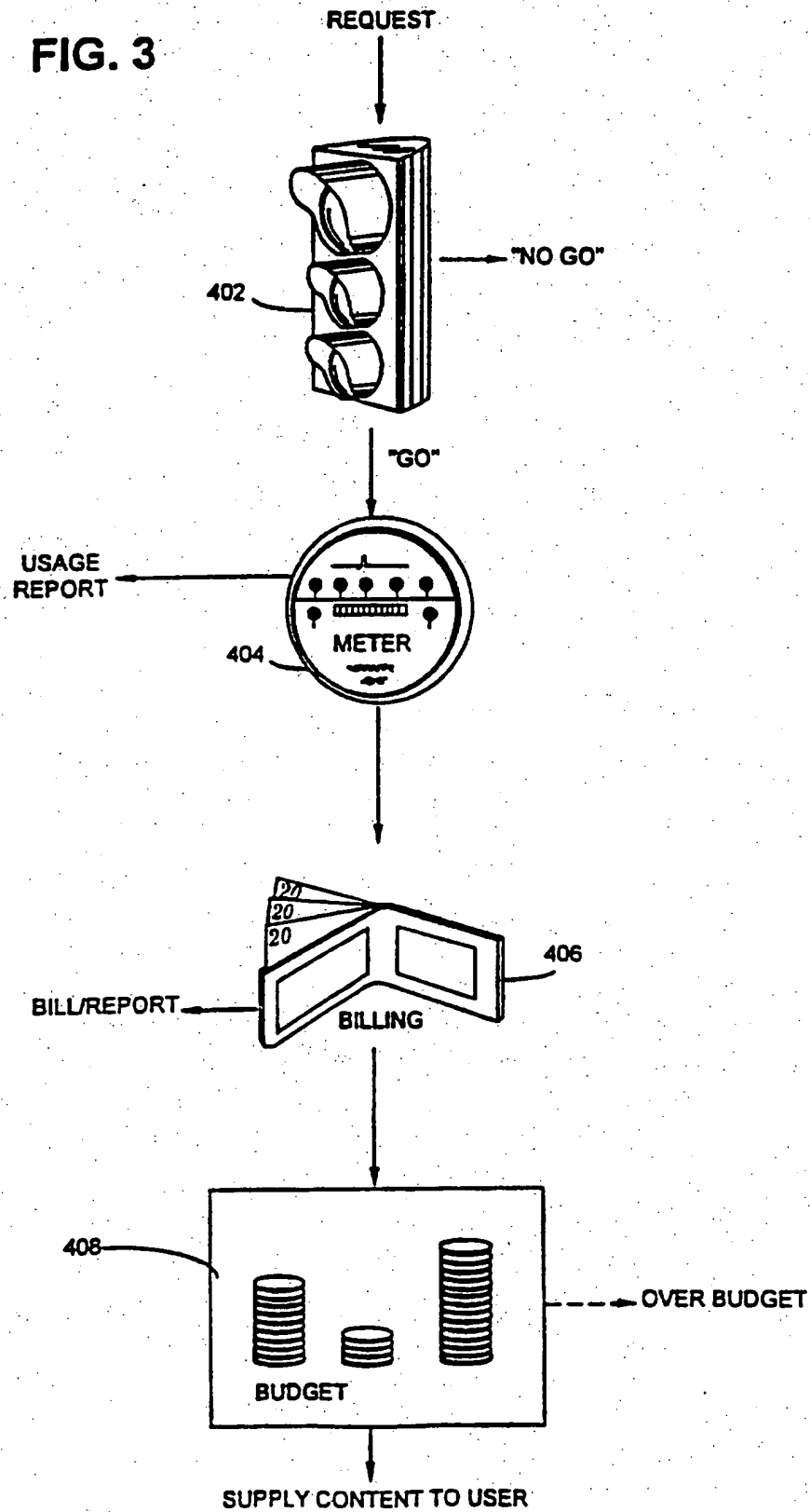


FIG. 3



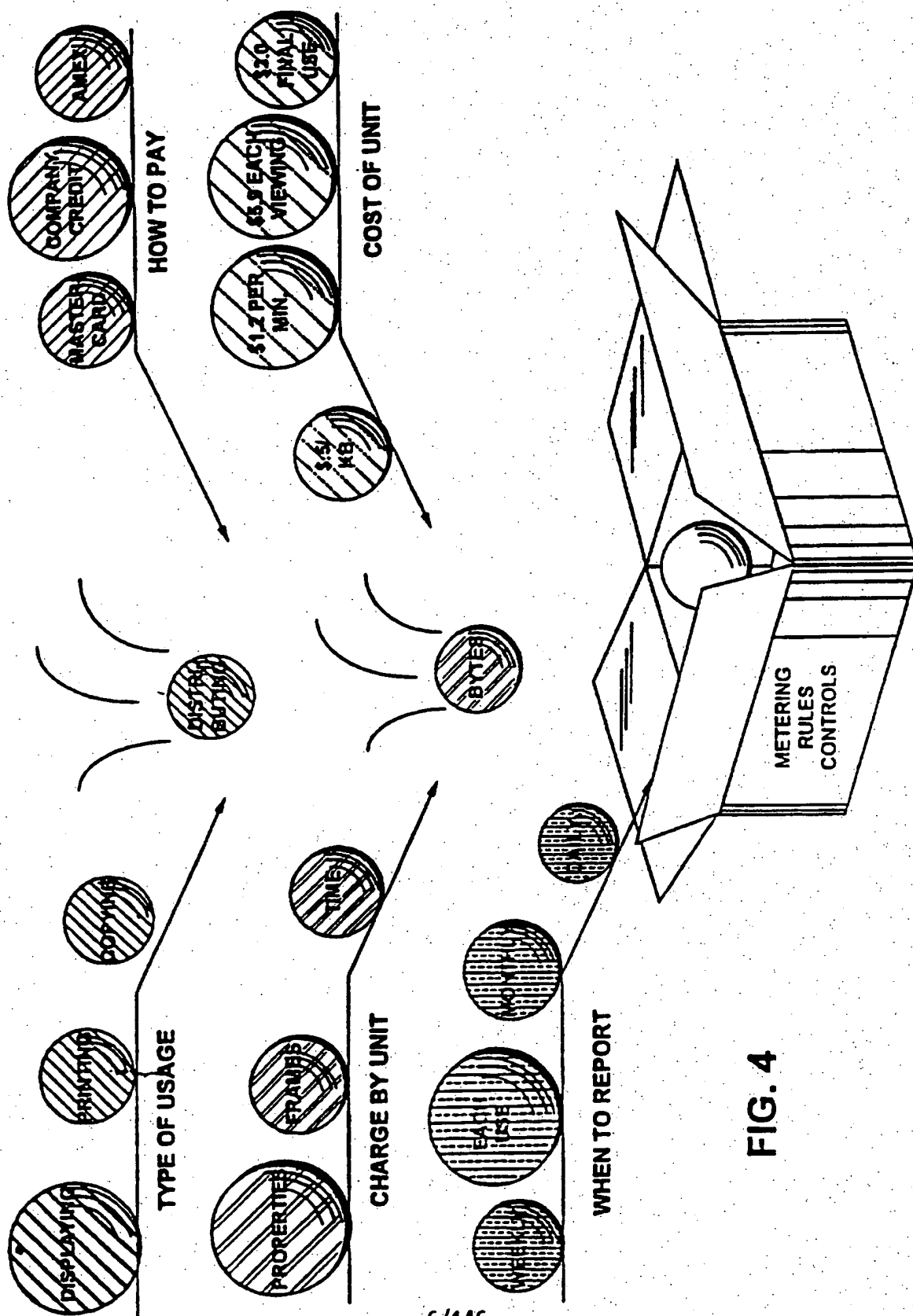
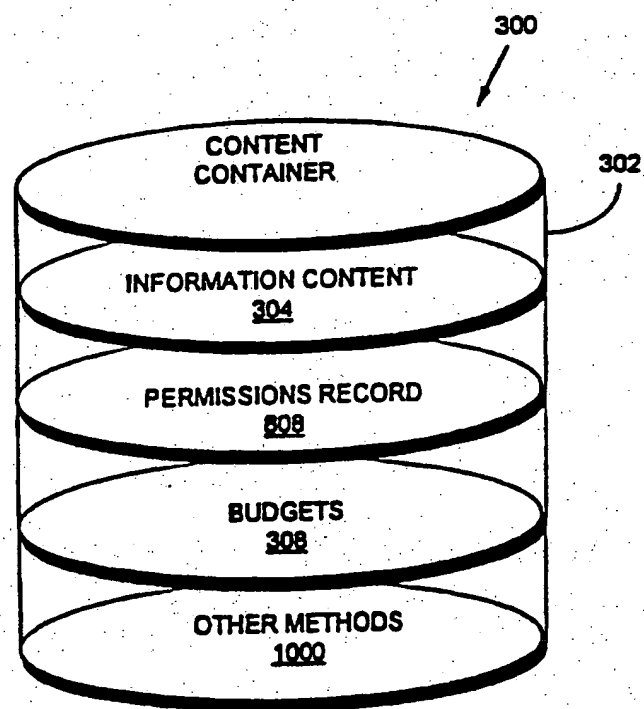


FIG. 4

FIG. 5A



**FIG. 5B**

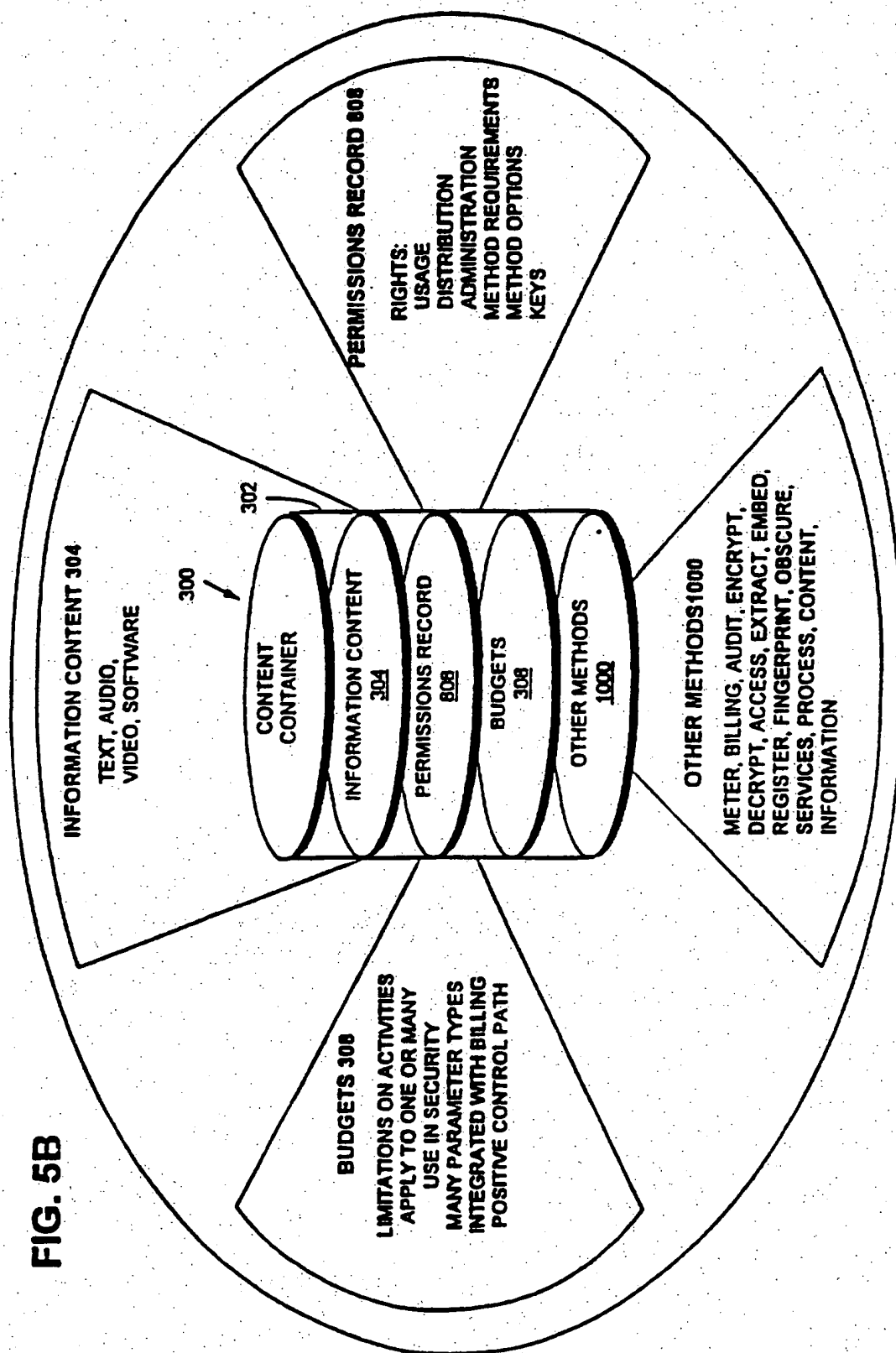
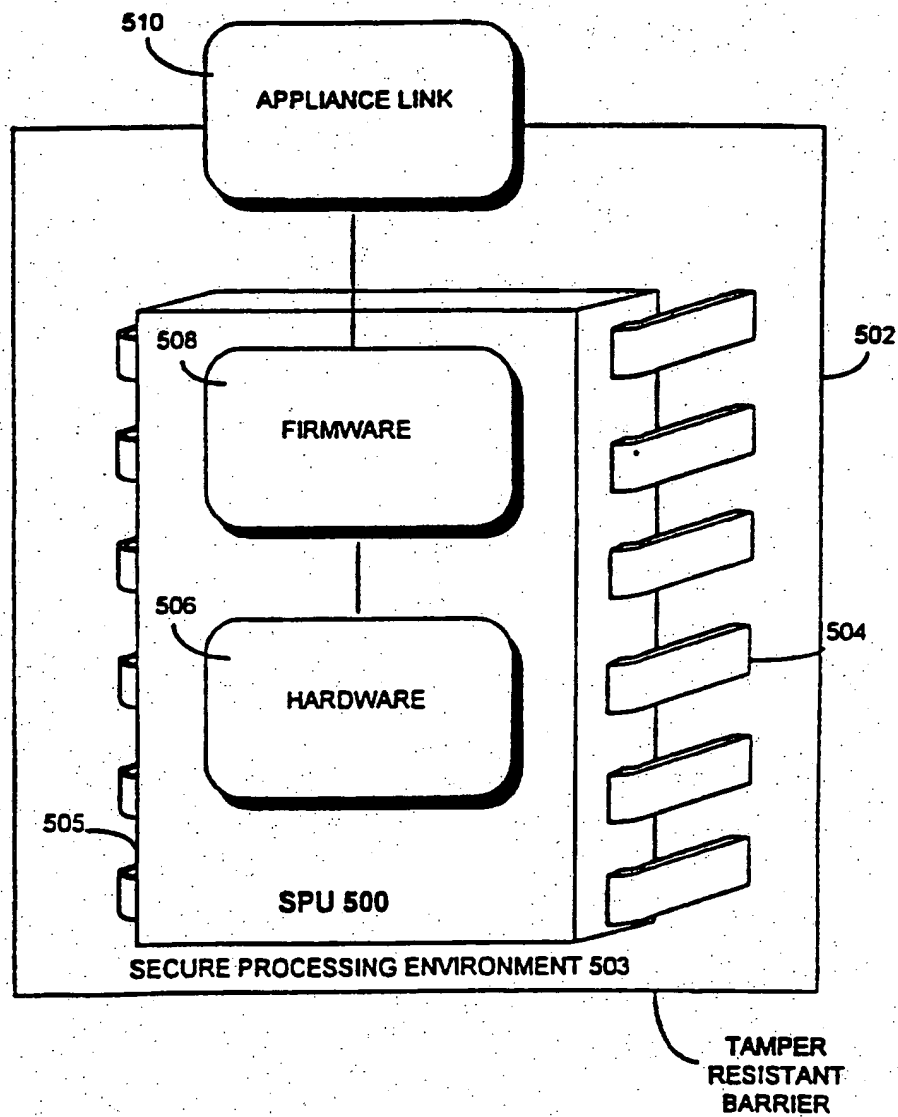
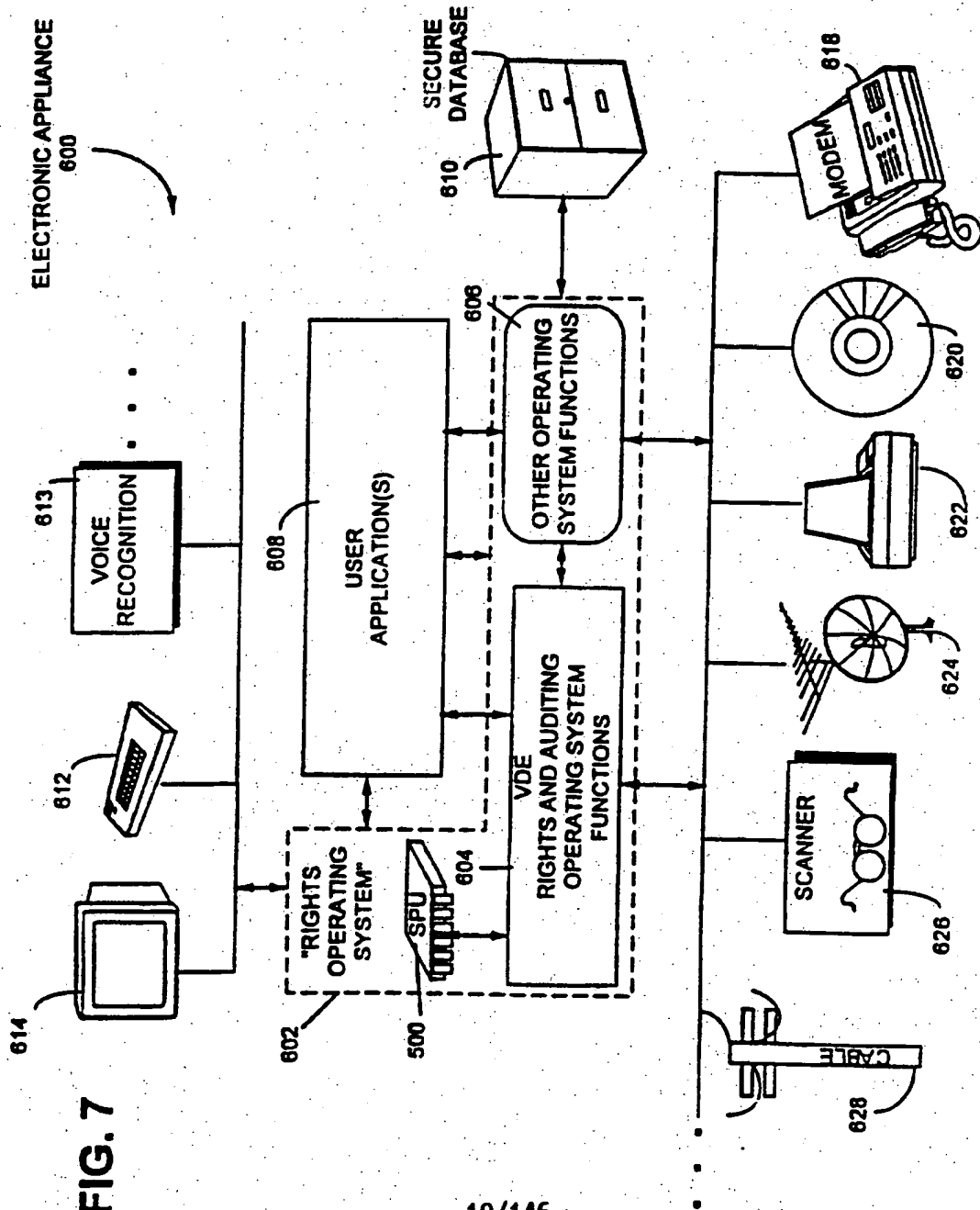
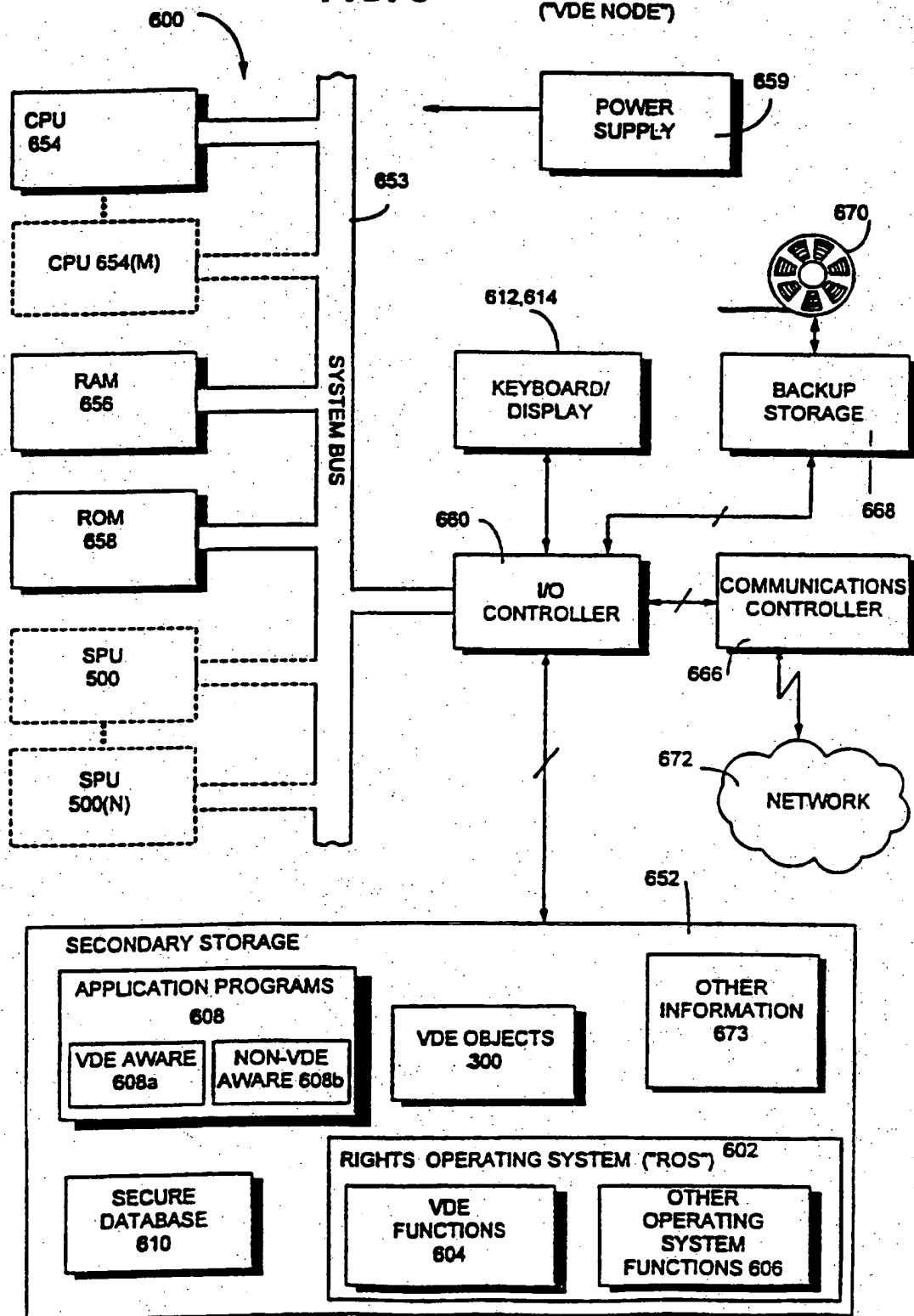


FIG. 6





**FIG. 8** ELECTRONIC APPLIANCE 600  
("VDE NODE")



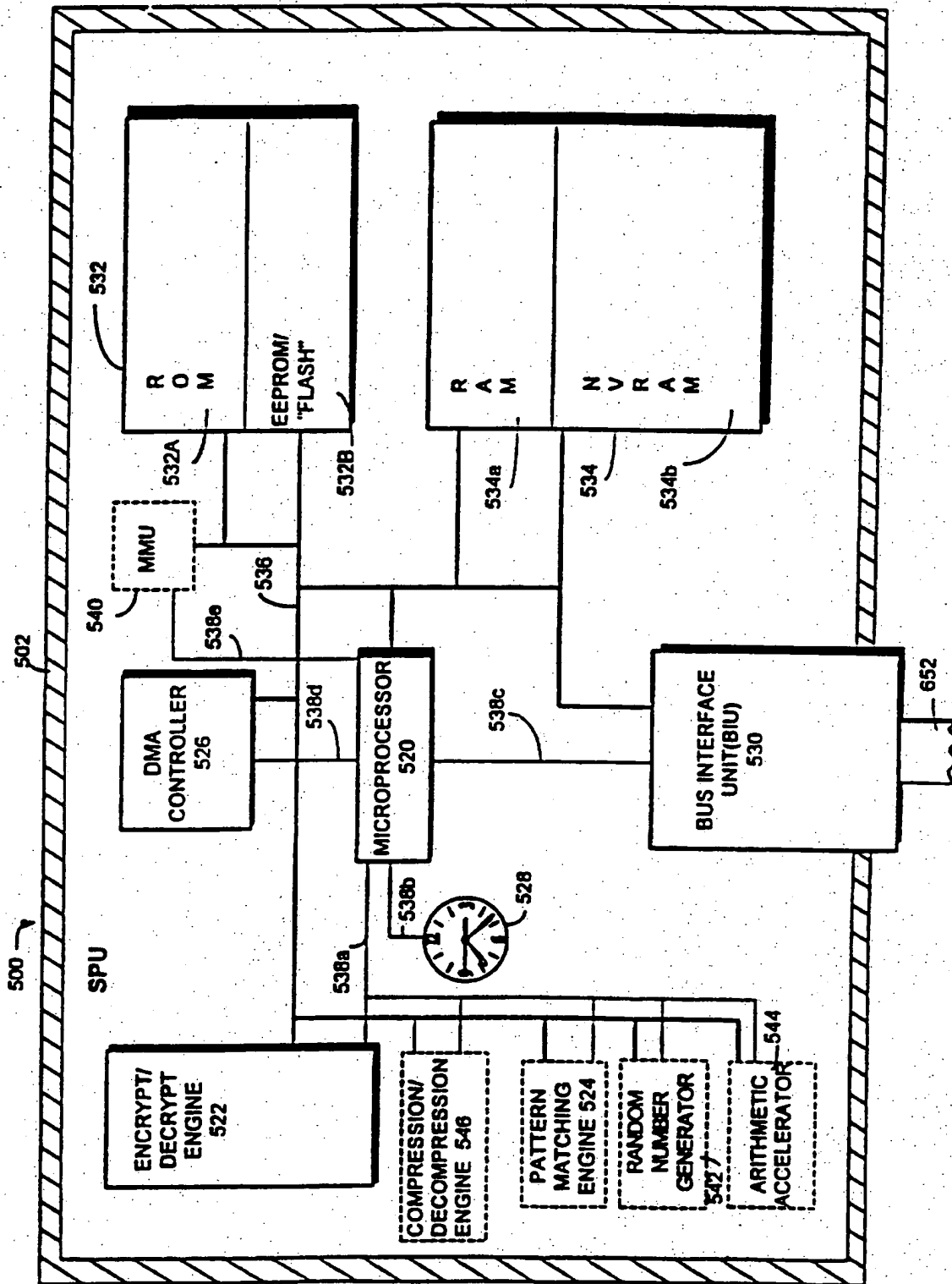


FIG. 9

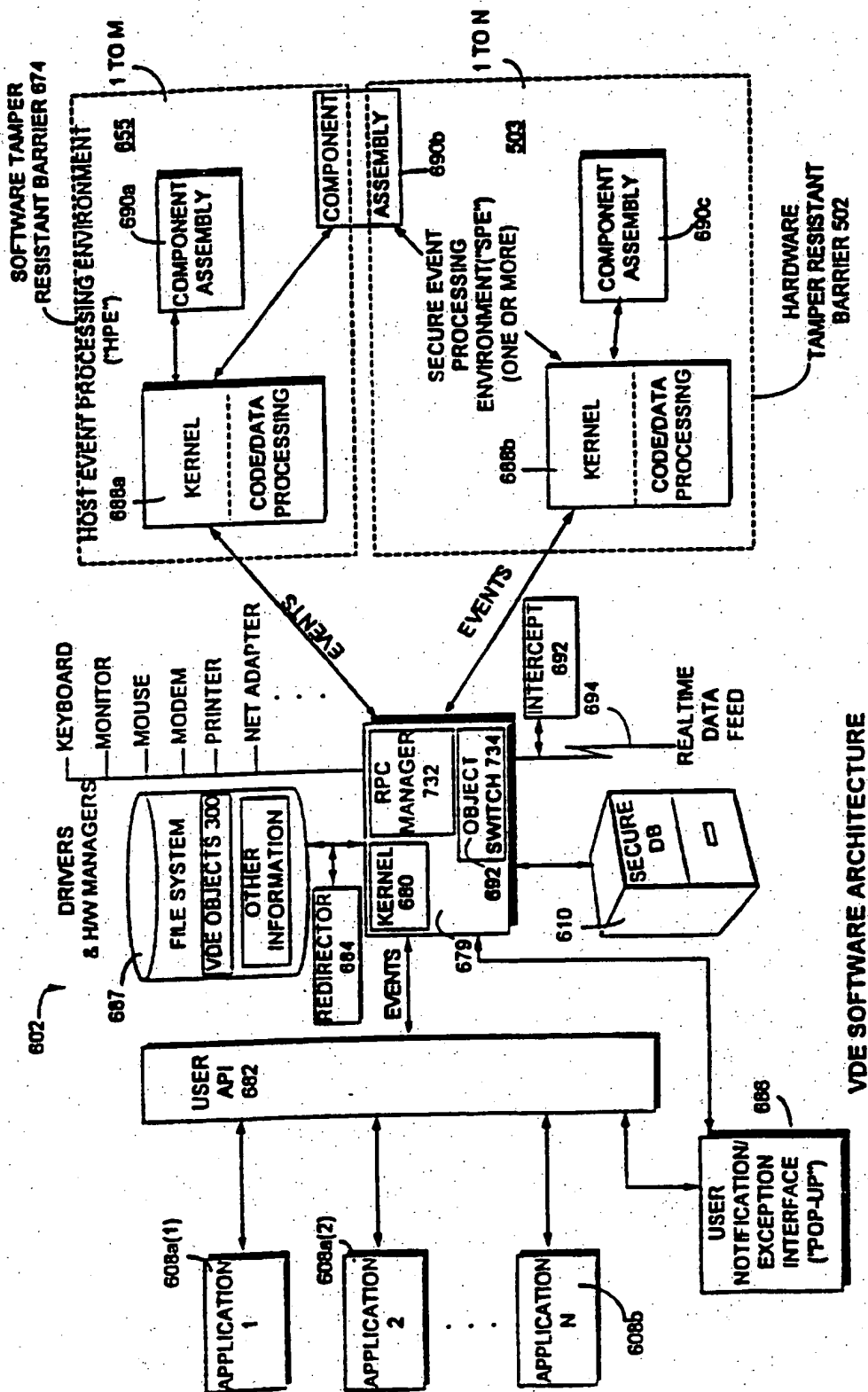


FIG. 10

FIG. 11C

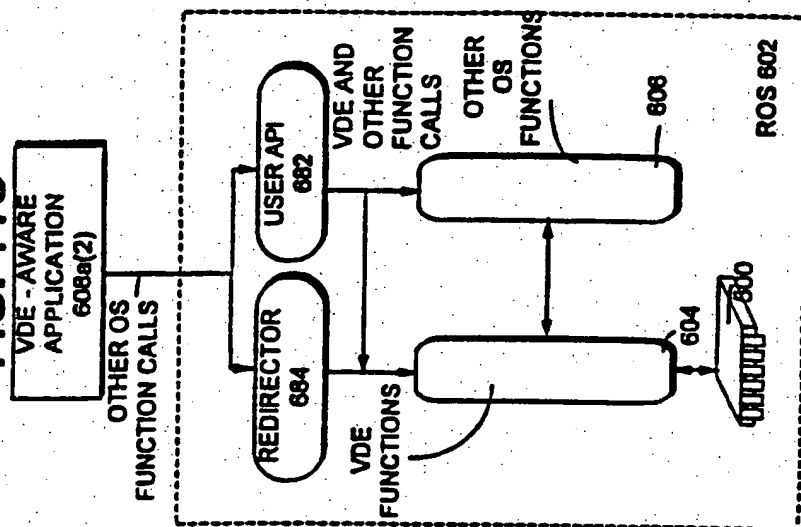


FIG. 11B

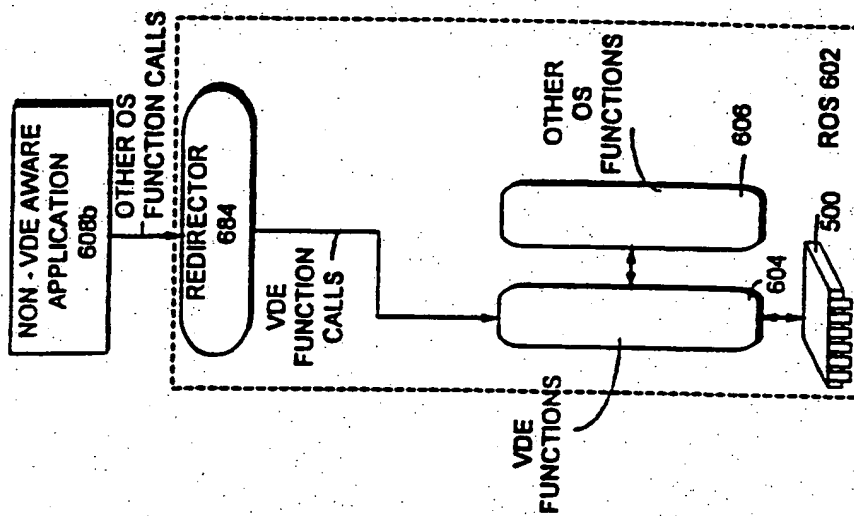
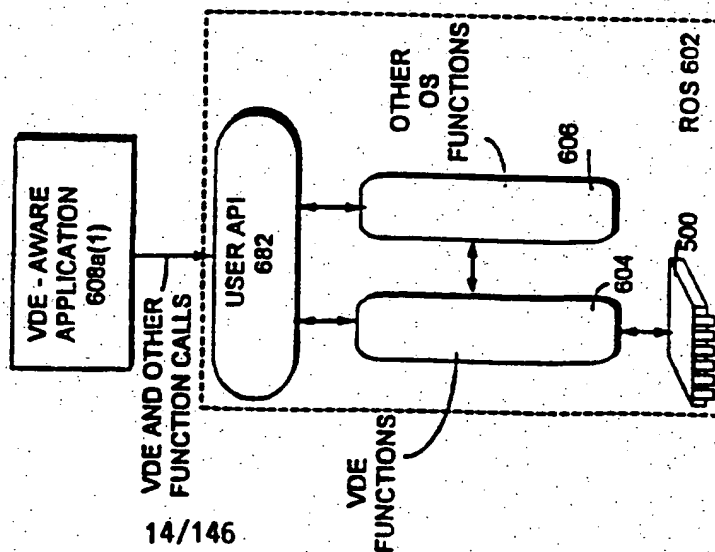
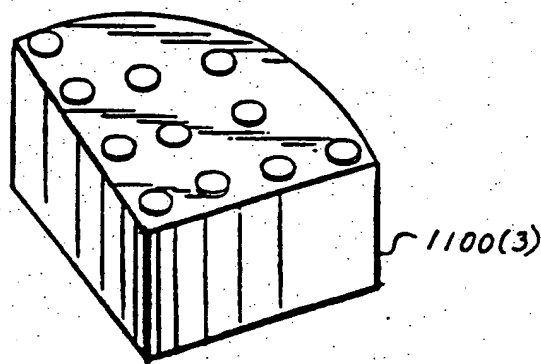
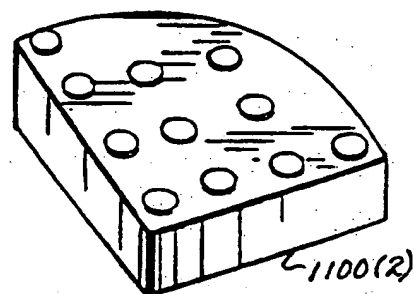
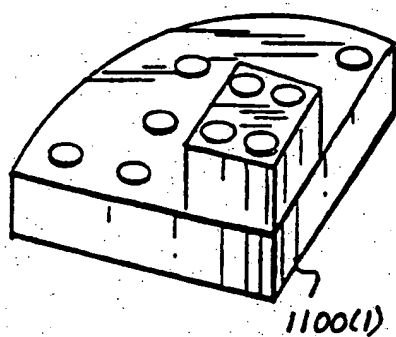
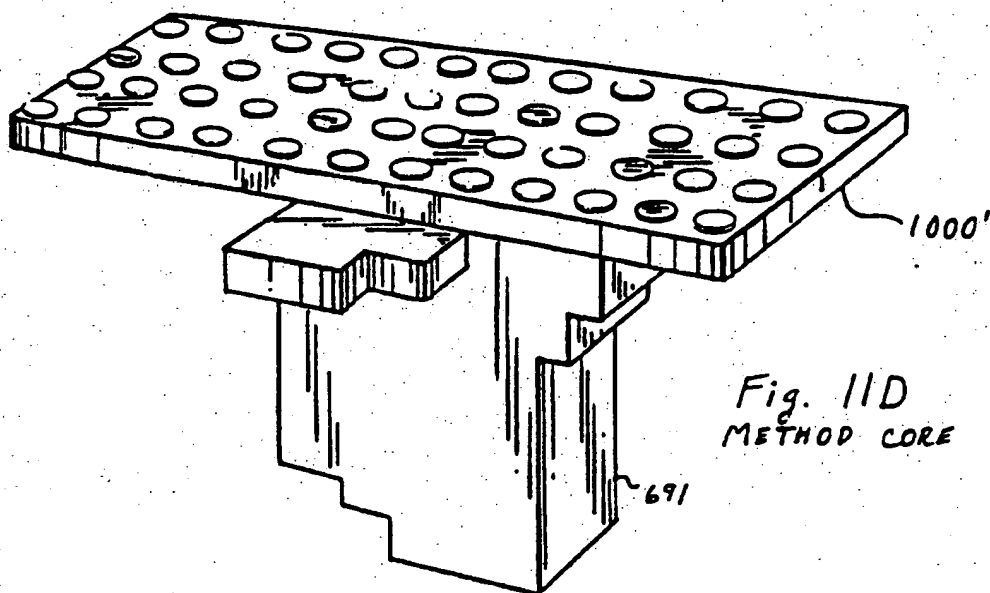


FIG. 11A





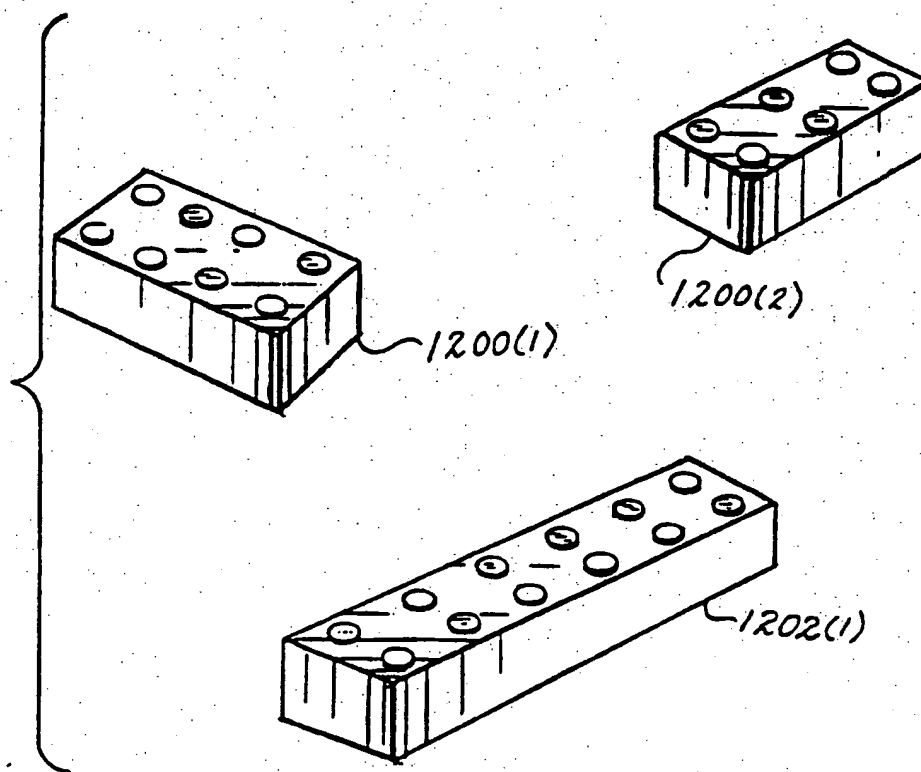
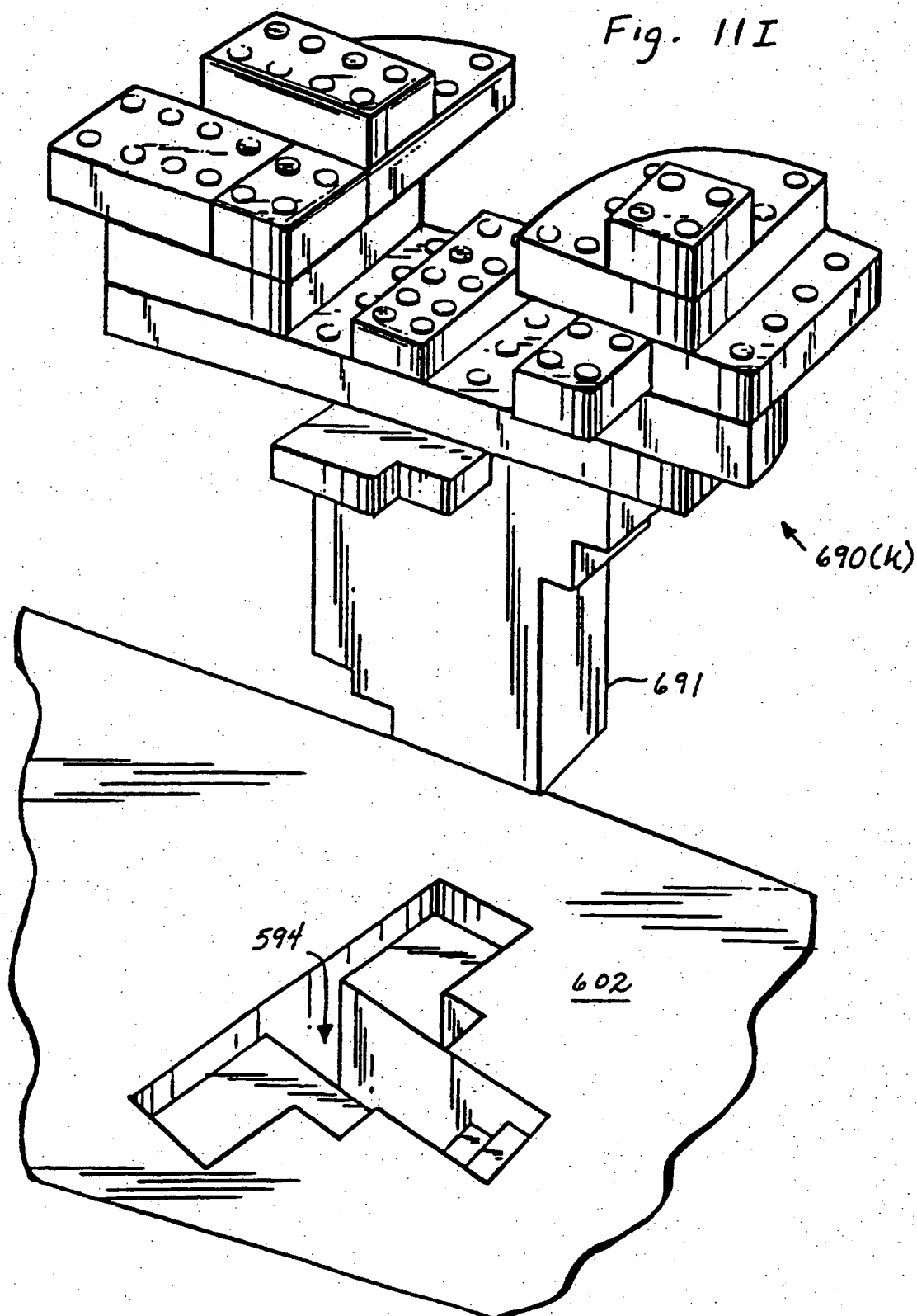
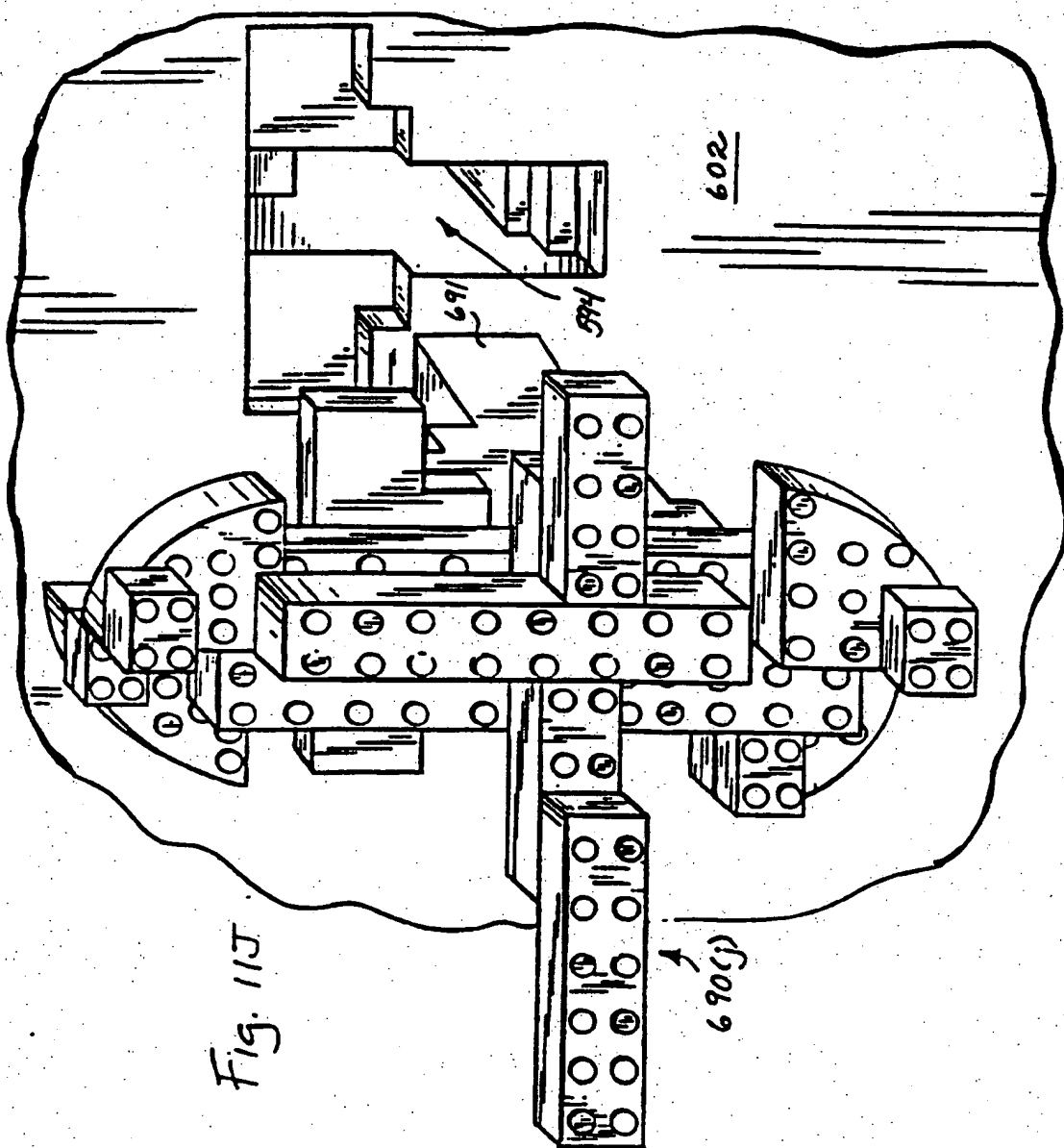


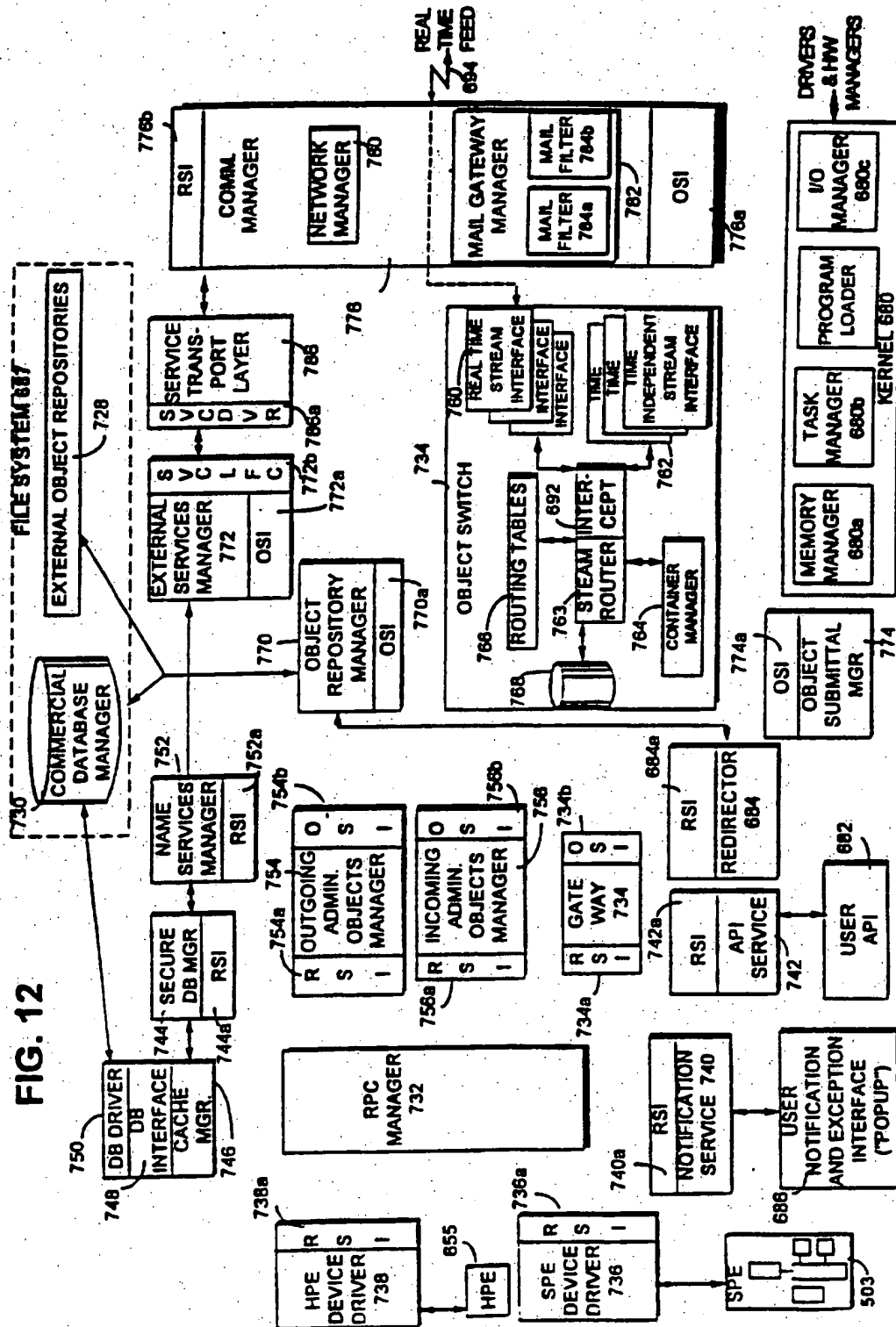
Fig. 11H  
DATA STRUCTURES

Fig. 11I





**FIG. 12**





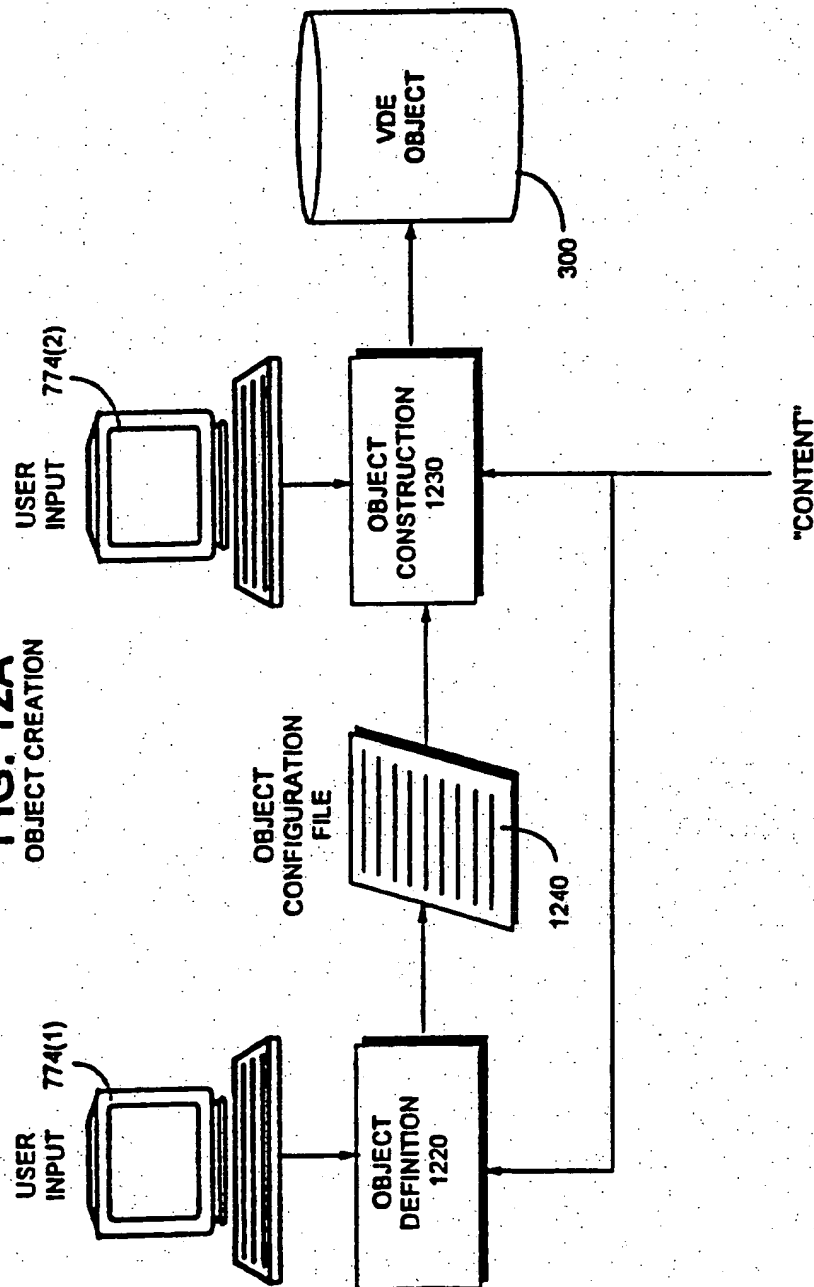
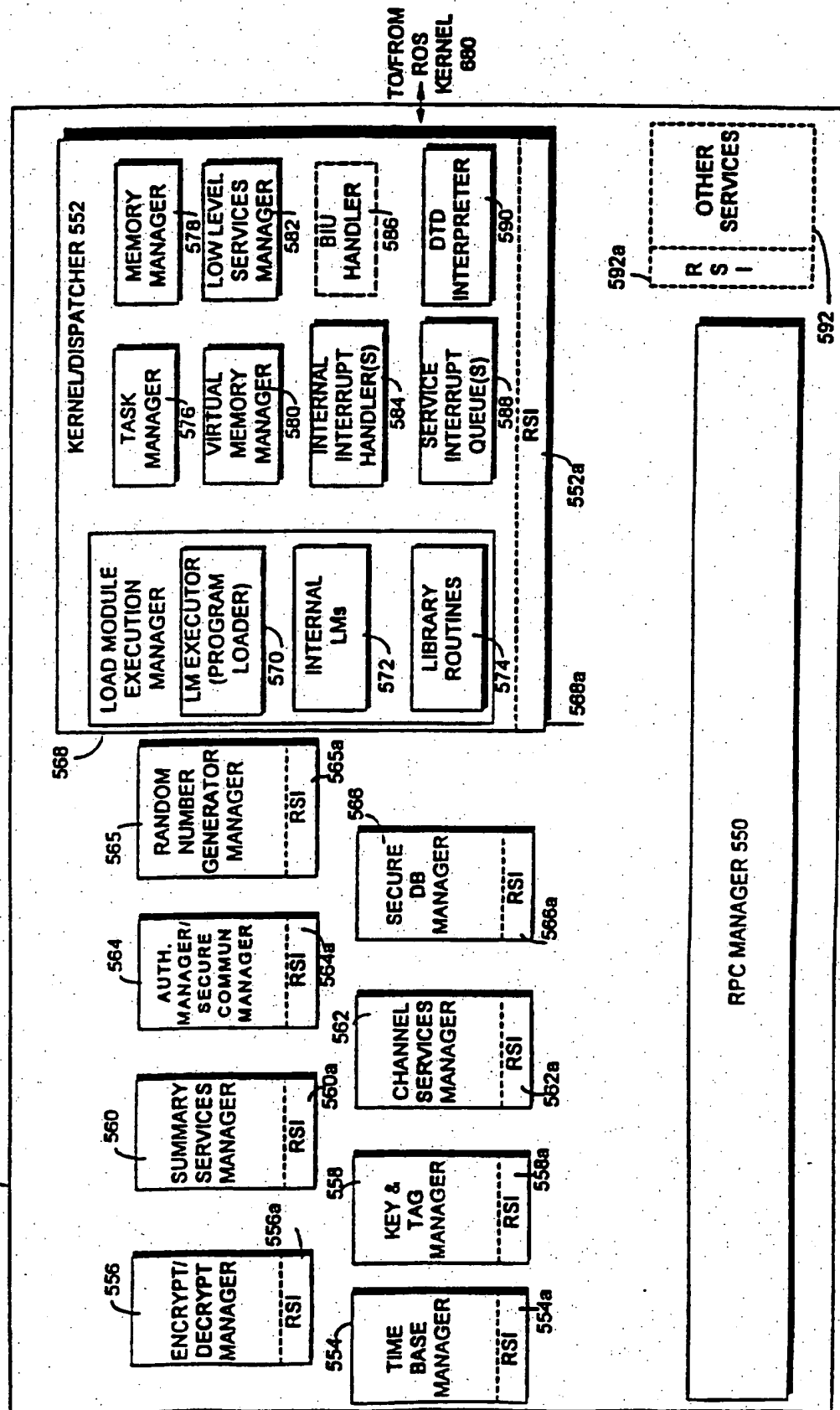
**FIG. 12A**  
OBJECT CREATION

FIG. 13

PROTECTED PROCESSING ENVIRONMENT 650

503, 655



DEVICE FIRM WIRE LOW LEVEL SERVICES 582
INITIALIZATION
POST
DOWNLOAD CHALLENGE/RESPONSE AND AUTHENTICATION
RECOVERY
EEPROM/FLASH MEMORY MANAGER
KERNEL/DISPATCHER 552
INITIALIZATION
TASK MANAGER 576 (SLEEP/AWAKE/CONTEXT SWAP)
INTERRUPT HANDLER 584 (TIMER/BIU/POWER FAIL/WATCHDOG TIMER/ENCRYPTION COMPLETED)
BIU HANDLER 586
MEMORY MANAGER 578
INITIALIZATION (SETTING MMU TABLES
ALLOCATE
DEALLOCATE
VIRTUAL MEMORY MANAGER 580
SWAP BLOCK PAGING
EXTERNAL MODULE PAGING
MEMORY COMPRESS
RPC AND TABLES 550
INITIALIZATION
MESSAGING CODE /SERVICES MANAGER
SEND/RECEIVE
STATUS
RPC DISPATCH TABLE
RPC SERVICE TABLE

TIME BASE MANAGER 554
ENCRYPTION/DECRYPTION MANAGER 556
PK
BULK
KEY AND TAG MANAGER 558
KEY STORAGE IN EEPROM
KEY LOCATOR
KEY GENERATOR
CONVOLUTION ALGORITHM
SUMMARY SERVICES MANAGER 560
EVENT SUMMARIES
BUDGET SUMMARIES
DISTRIBUTER SUMMARY SERVICES
CHANNEL SERVICES MANAGER 562
CHANNEL HEADERS
CHANNEL DETAILS
LOAD MODULE EXECUTION SERVICES 568
AUTHENTICATION MANAGER/SECURE COMMUNICATION MANAGER 564
DATABASE MANAGER 566
MANAGEMENT FILE SUPPORT
TRANSACTION AND SEQUENCE NUMBER SUPPORT
SRN/ HASH
DTD INTERPRETER 590
LIBRARY ROUTINES 574
I/O CALLS(STRING SEARCH ETC.)
MISC. ITEMS THAT ARE PROBABLY LIBRARY ROUTINES
TAG CHECKING,MD5,CRC'S
INTERNAL LM'S 572 FOR BASIC METHODS
METER LOAD MODULE(S)
BILLING LOAD MODULE(S)
BUDGET LOAD MODULE(S)
AUDIT LOAD MODULE(S)
READ OBJECT LOAD MODULE(S)
WRITE OBJECT LOAD MODULE(S)
OPEN OBJECT LOAD MODULE(S)
CLOSE OBJECT LOAD MODULE(S)

**FIG. 14A**

**SPU ROM/EEPROM/FLASH 532**

FIG. 14B

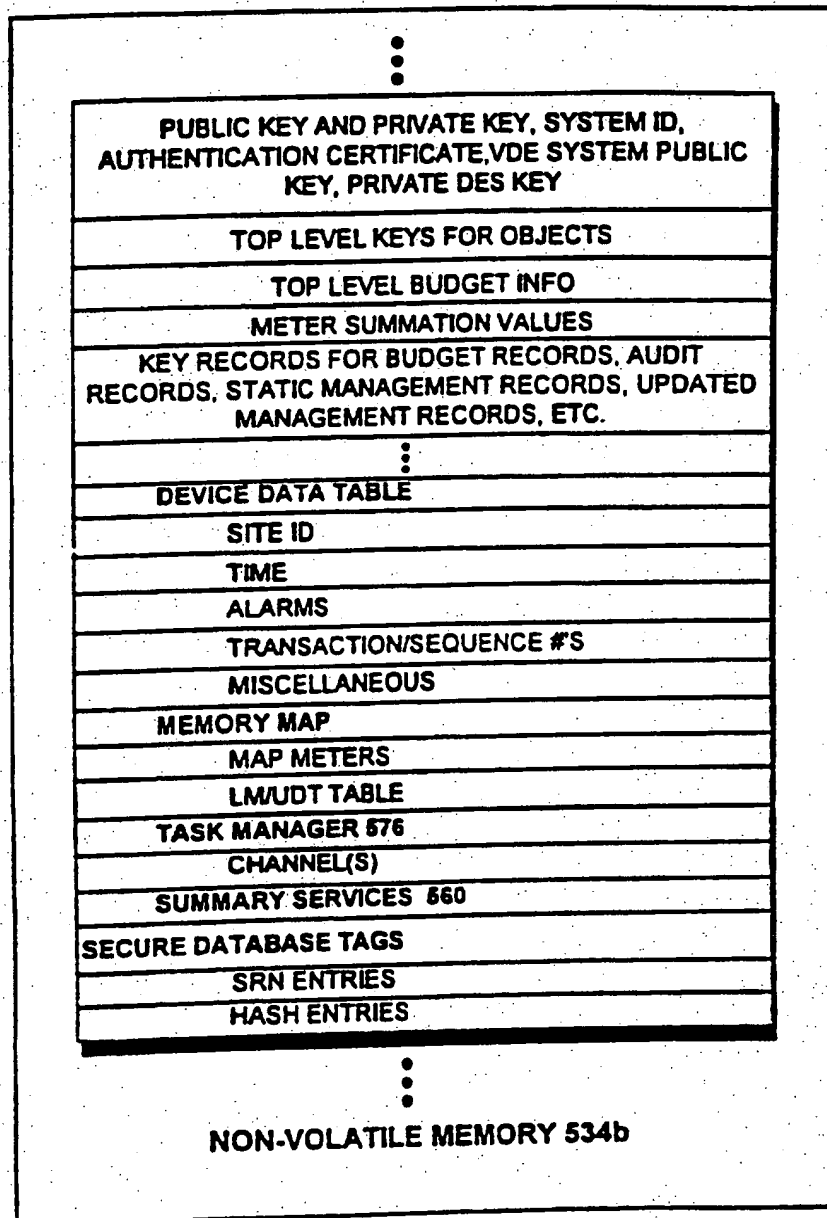
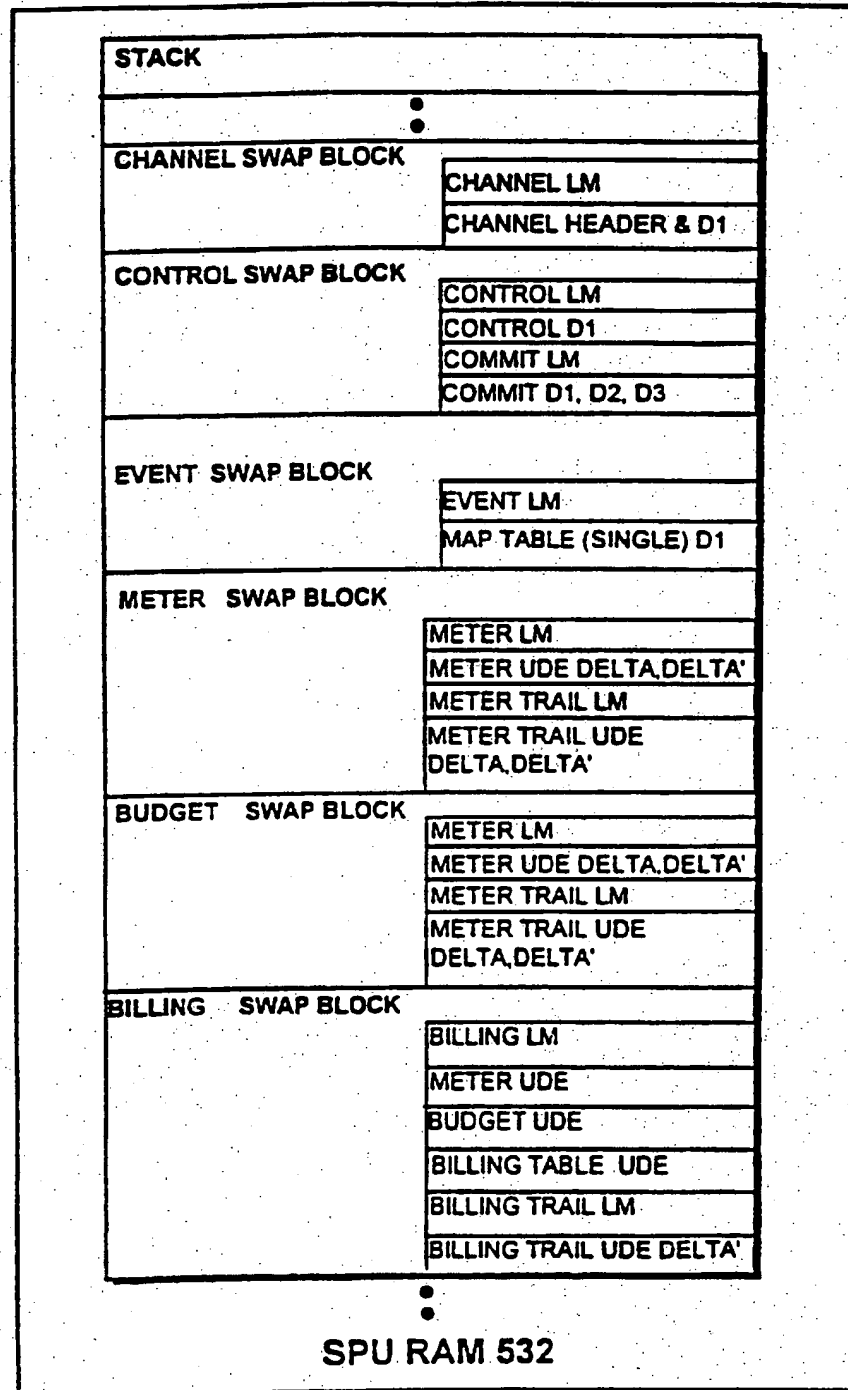
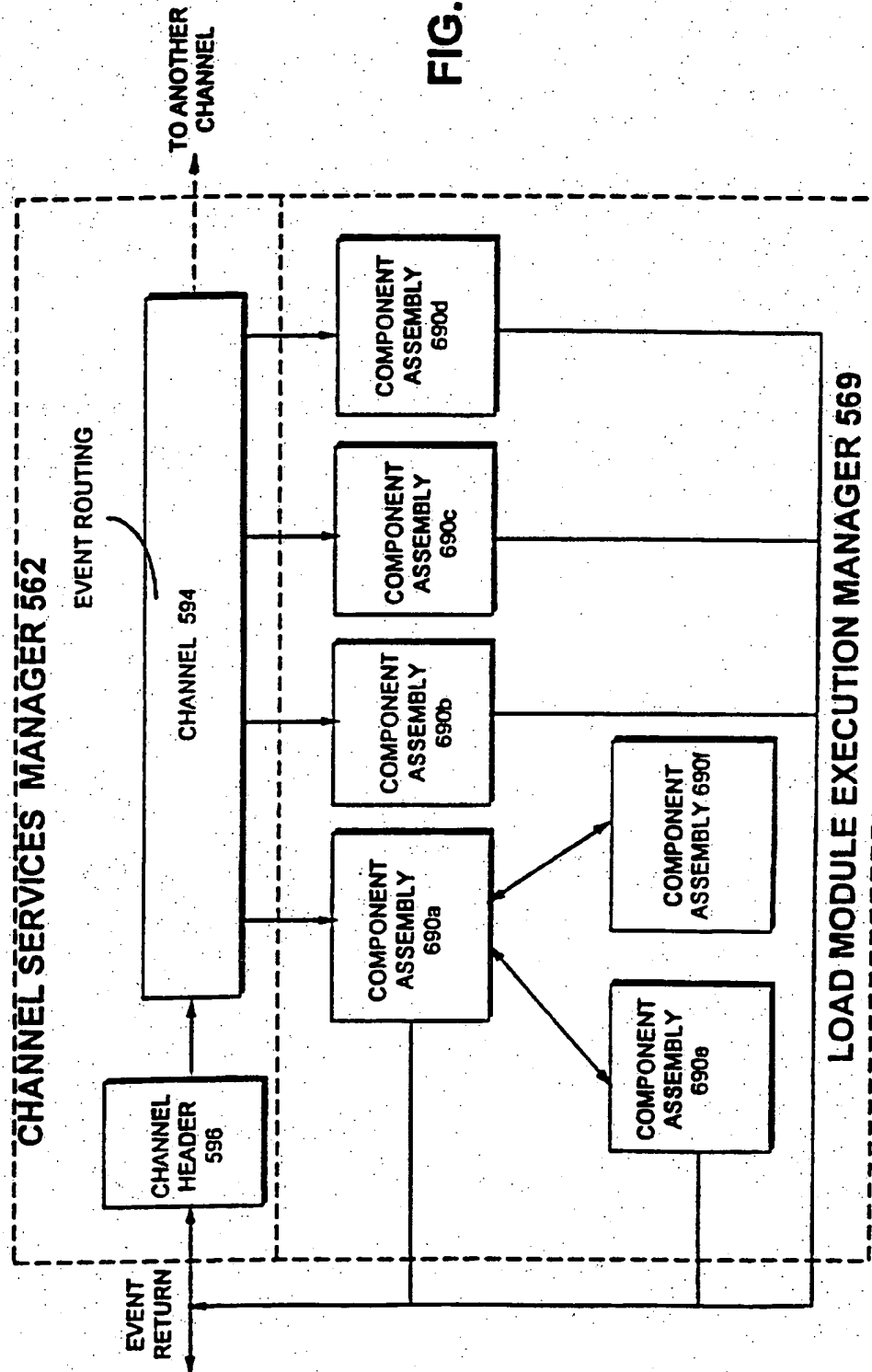


FIG. 14C





**FIG. 15**

FIG. 15A

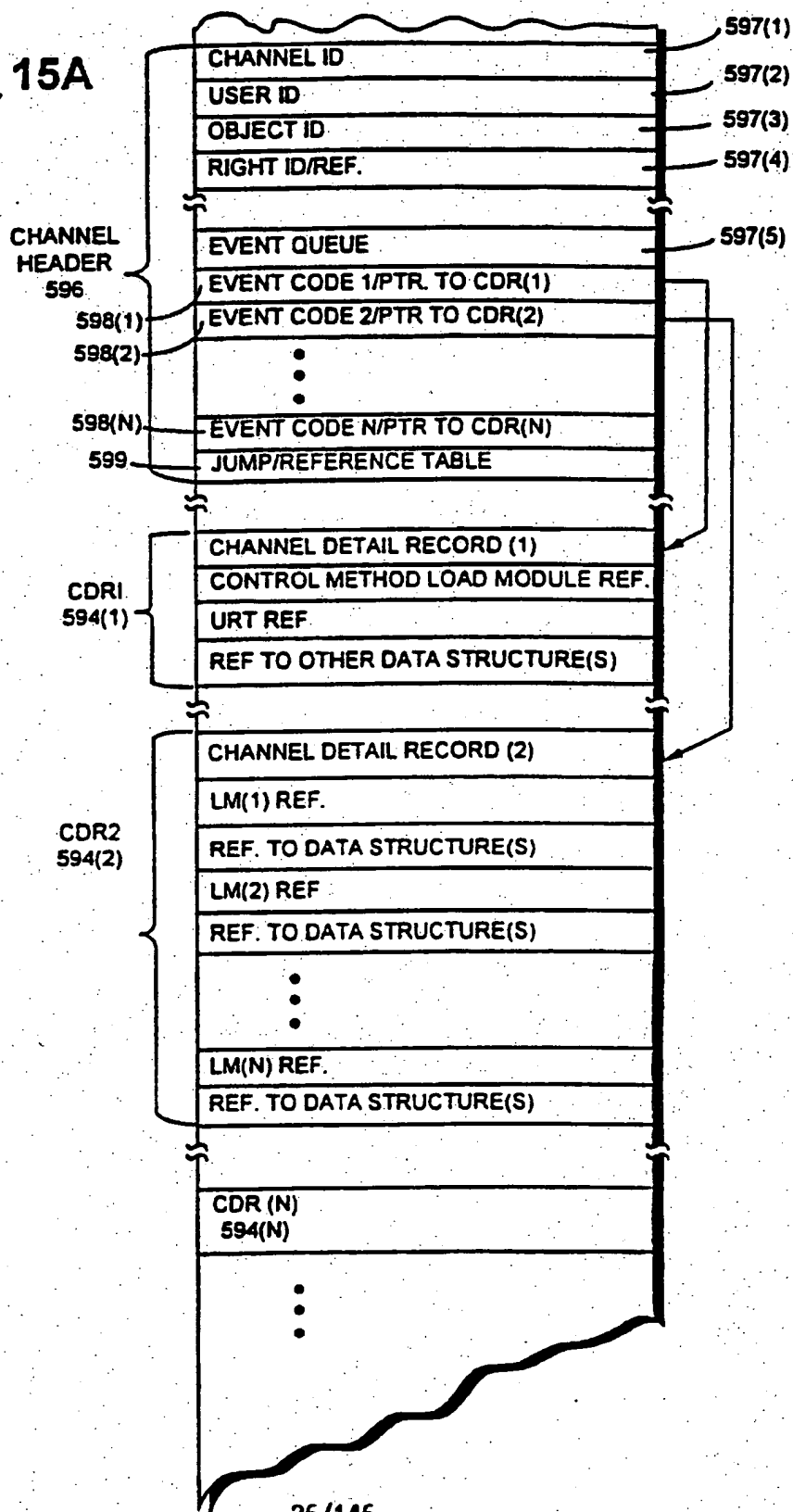


FIG. 15B

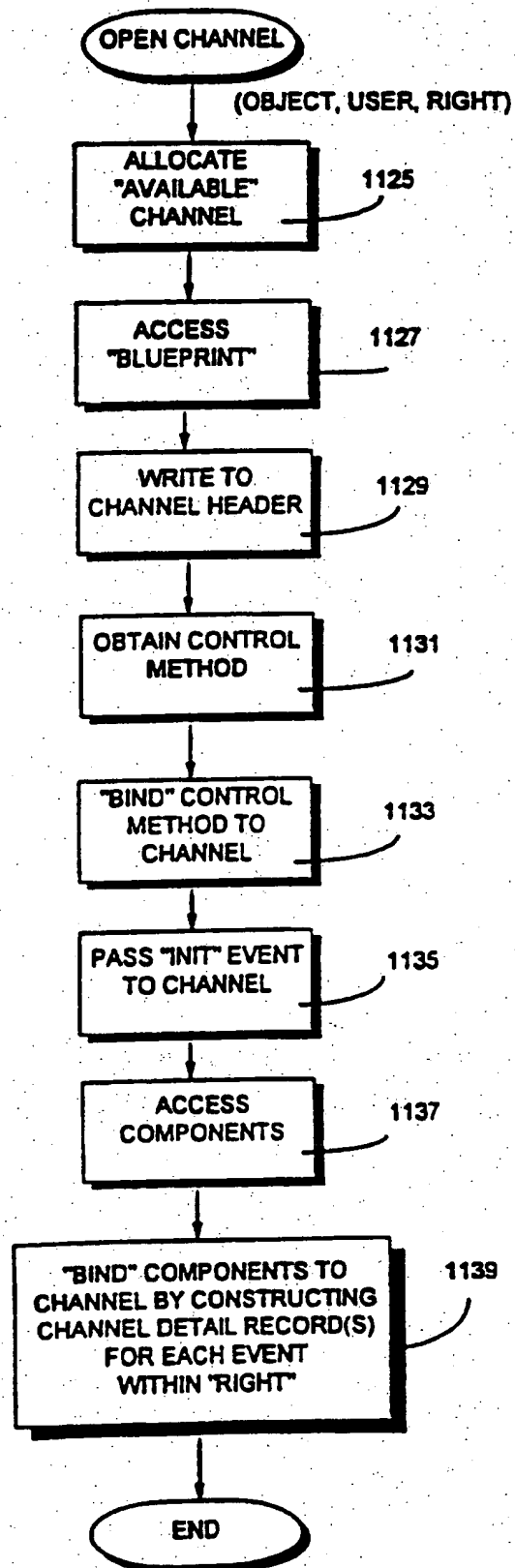
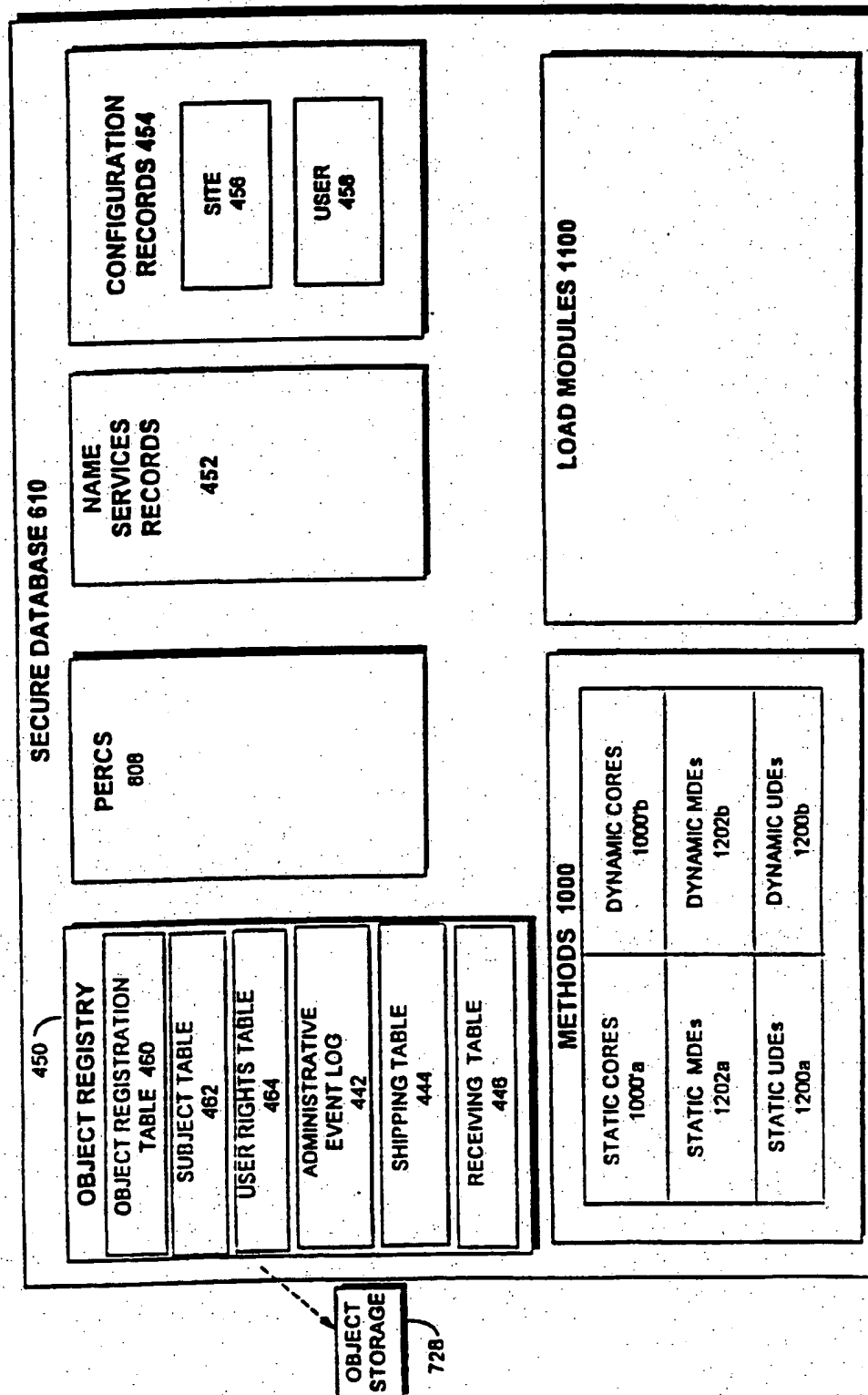
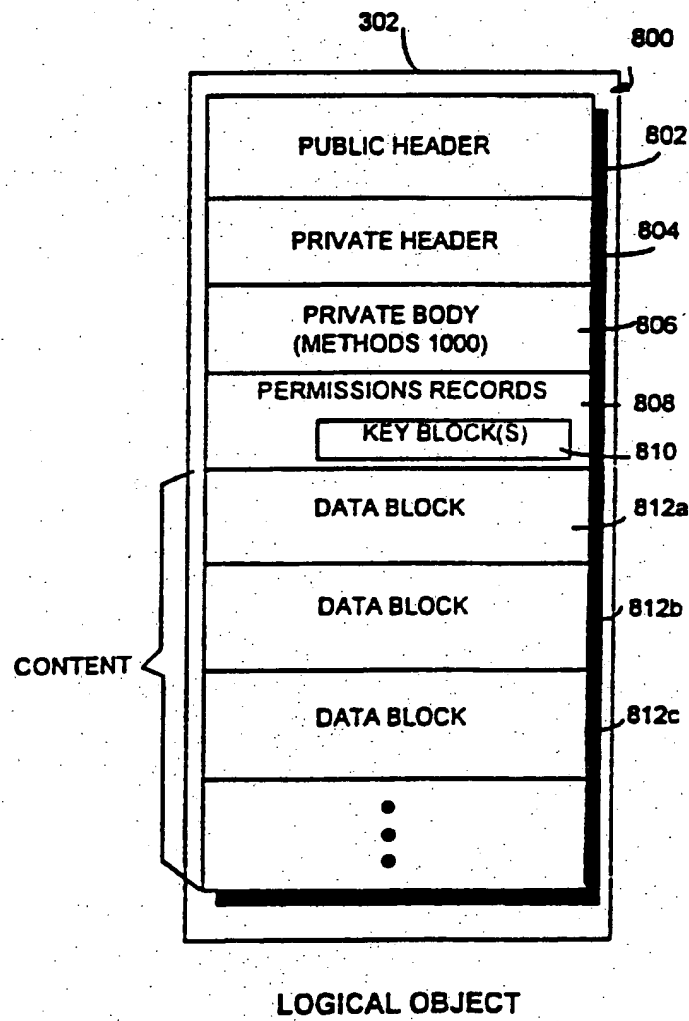


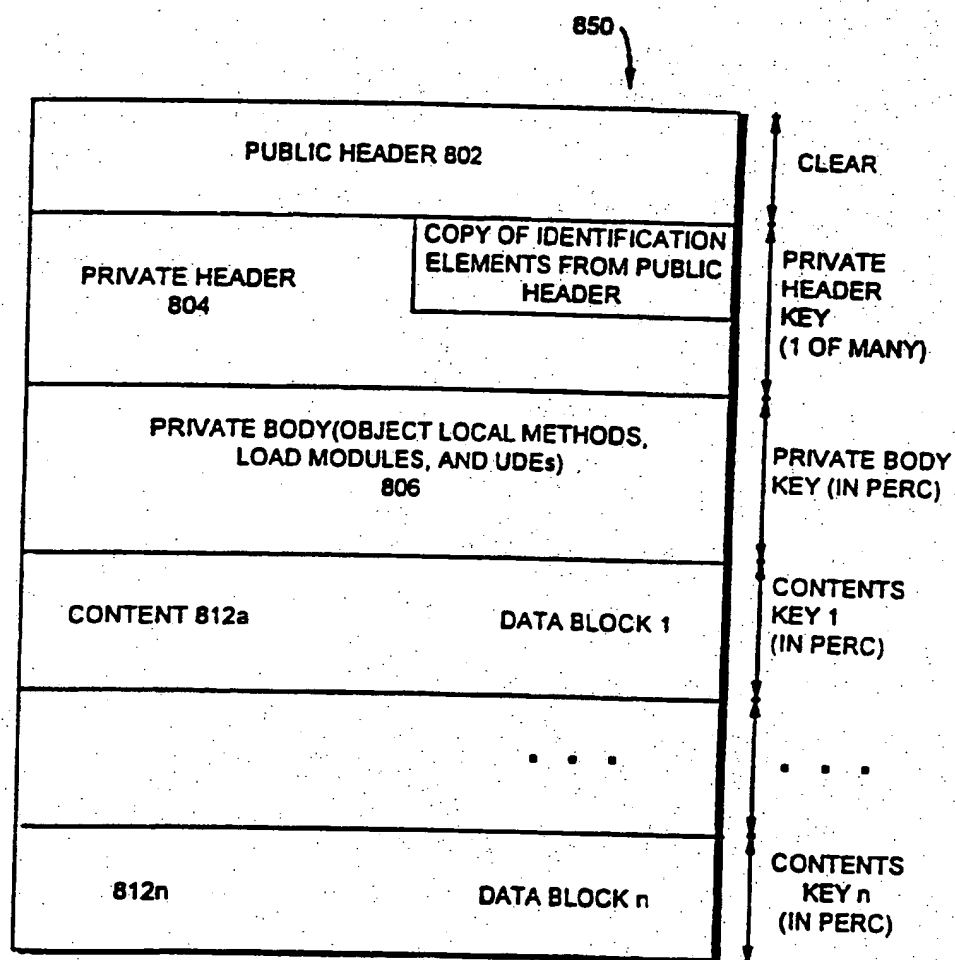


FIG. 16



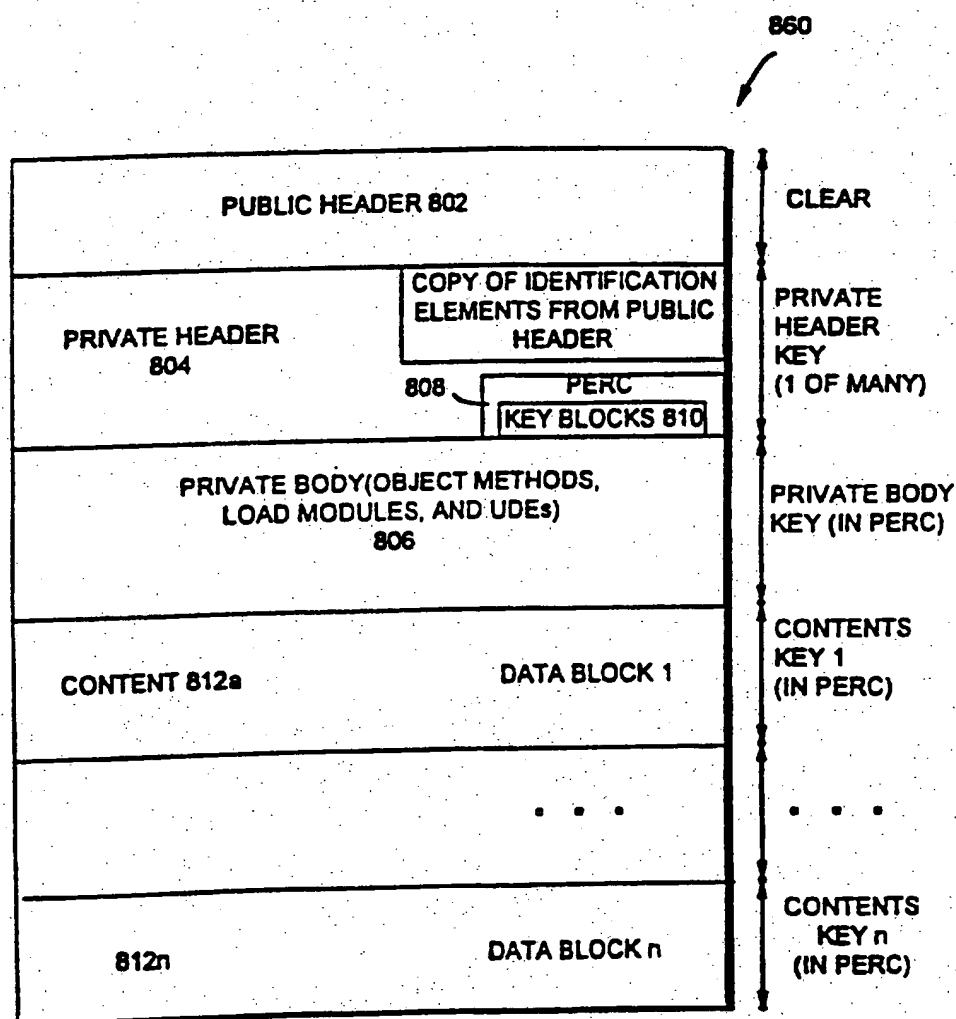


**FIG. 17**



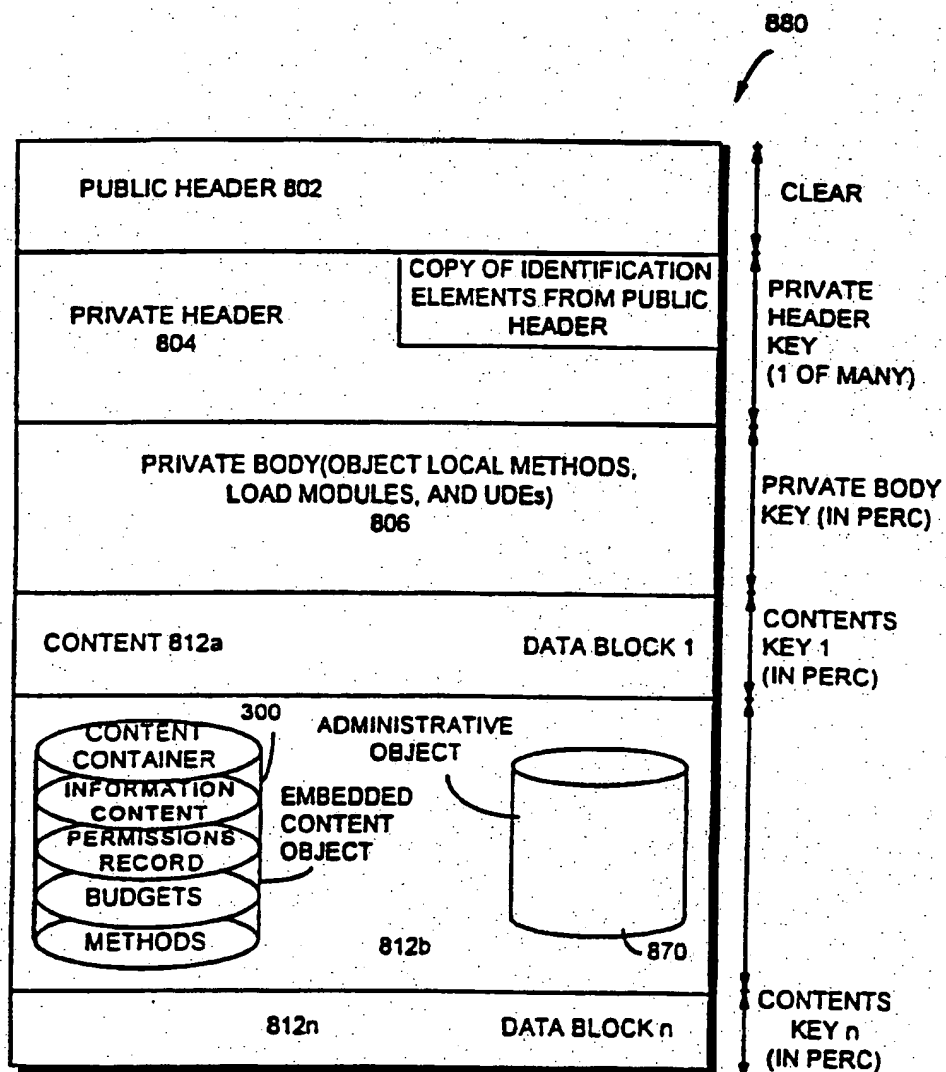
STATIONARY OBJECT

FIG. 18



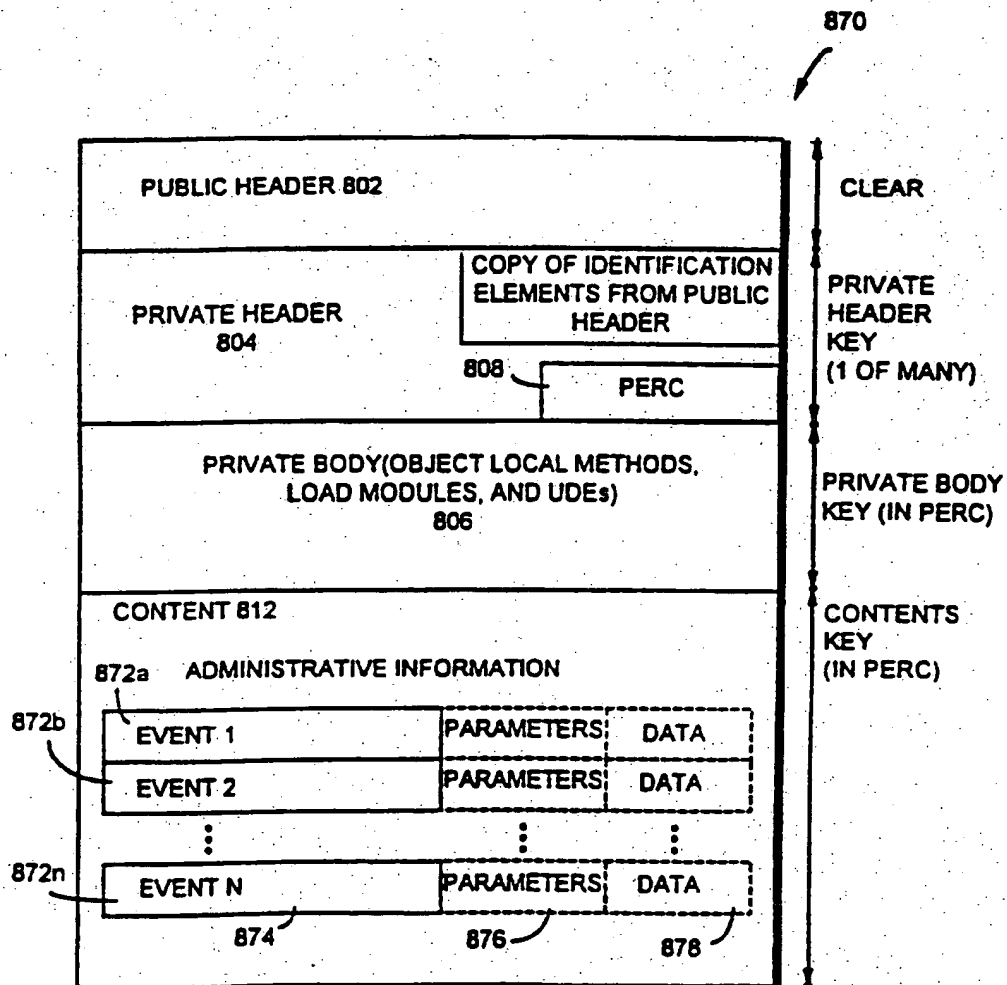
TRAVELING OBJECT

FIG. 19



CONTENT OBJECT

FIG. 20



ADMINISTRATIVE OBJECT

FIG. 21

FIG. 22

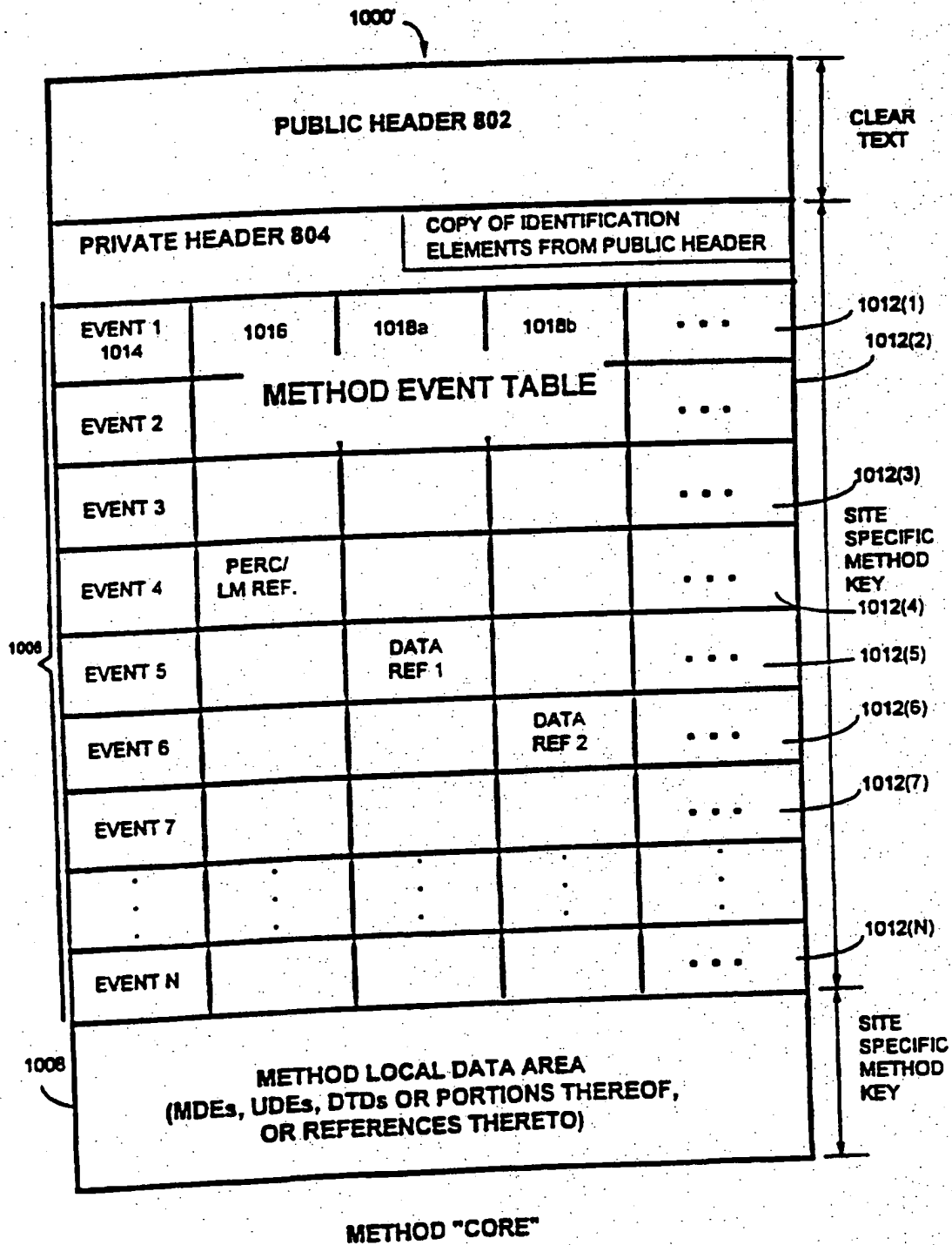
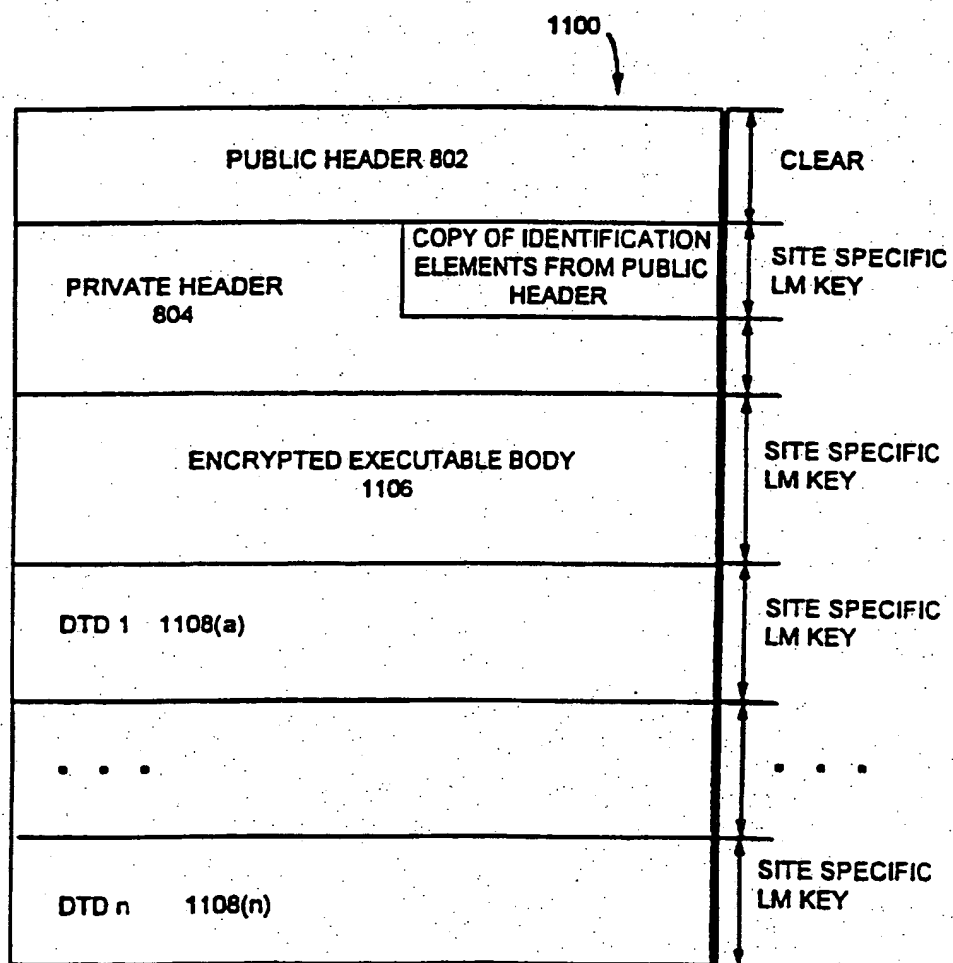


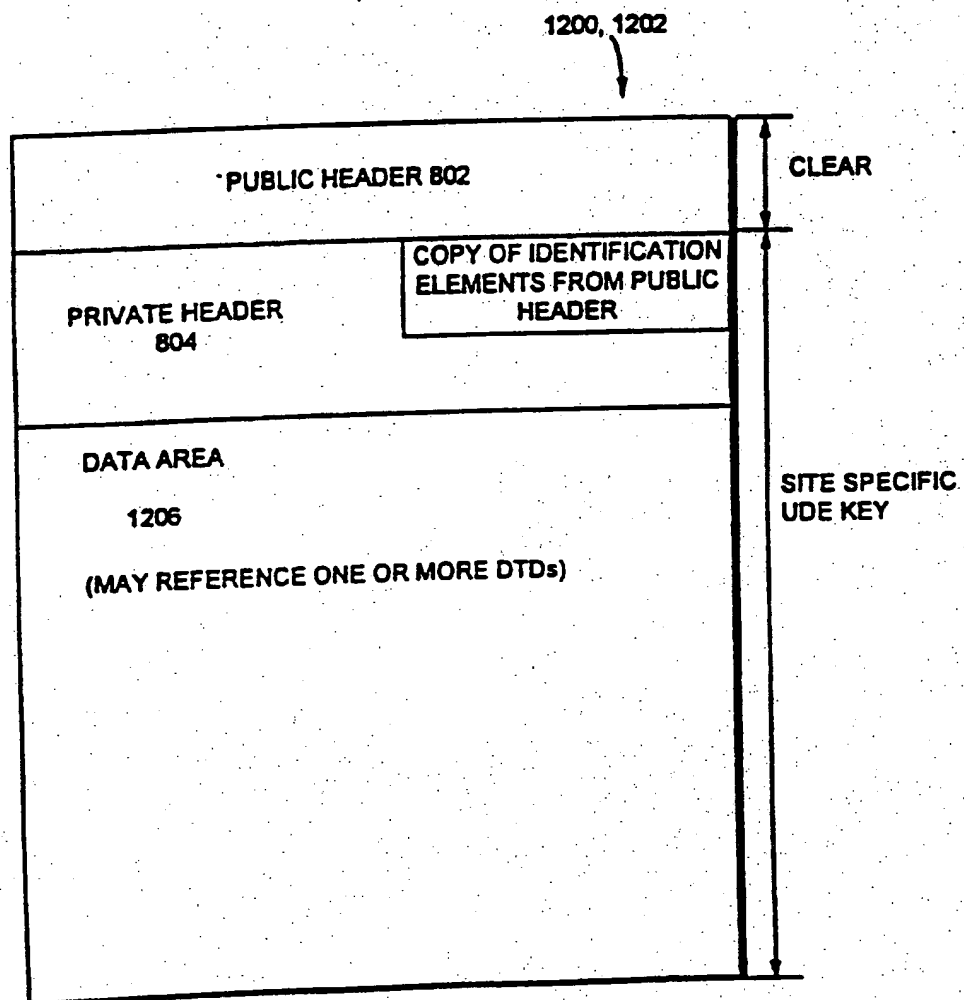
FIG. 23



LOAD MODULE



FIG. 24



UDE (MDE)

FIG. 25A

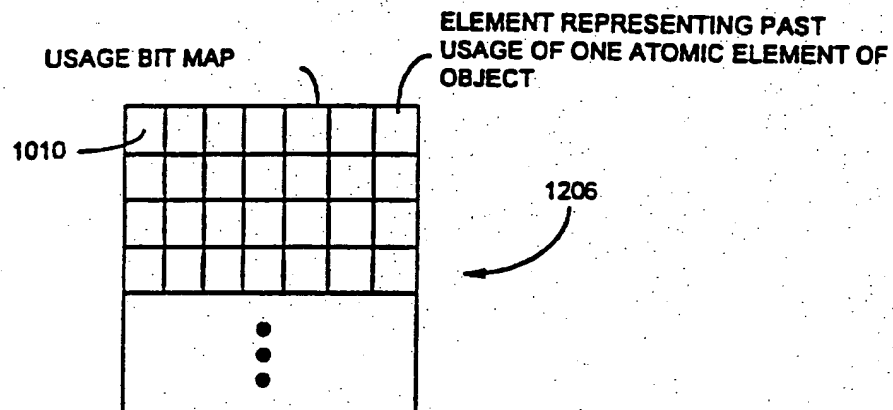


FIG. 25B

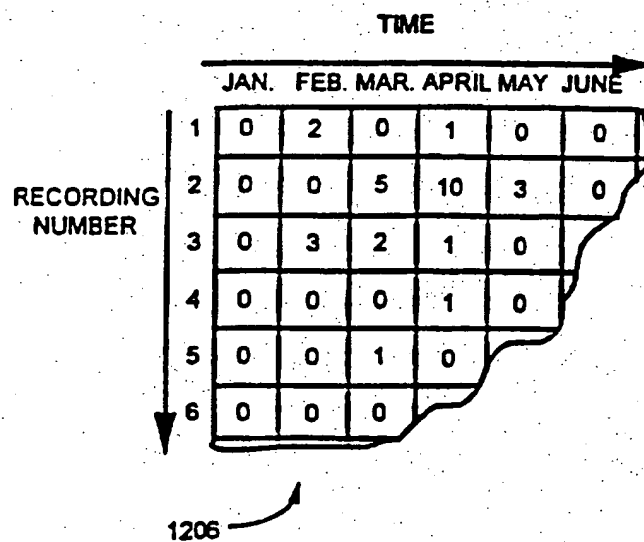


FIG. 25C

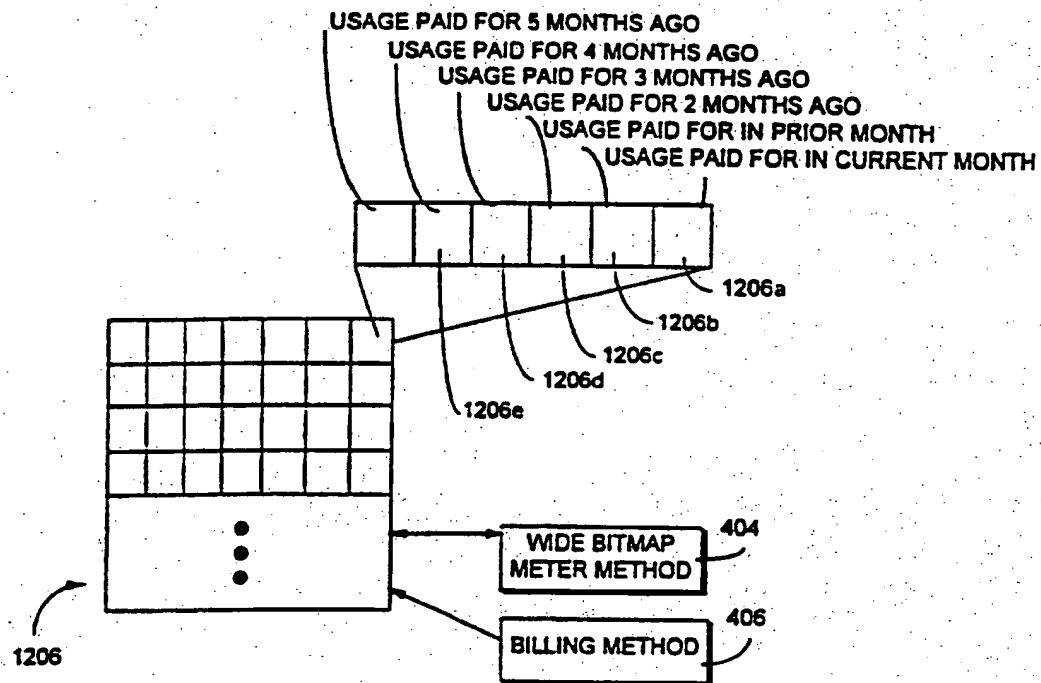


FIG. 26

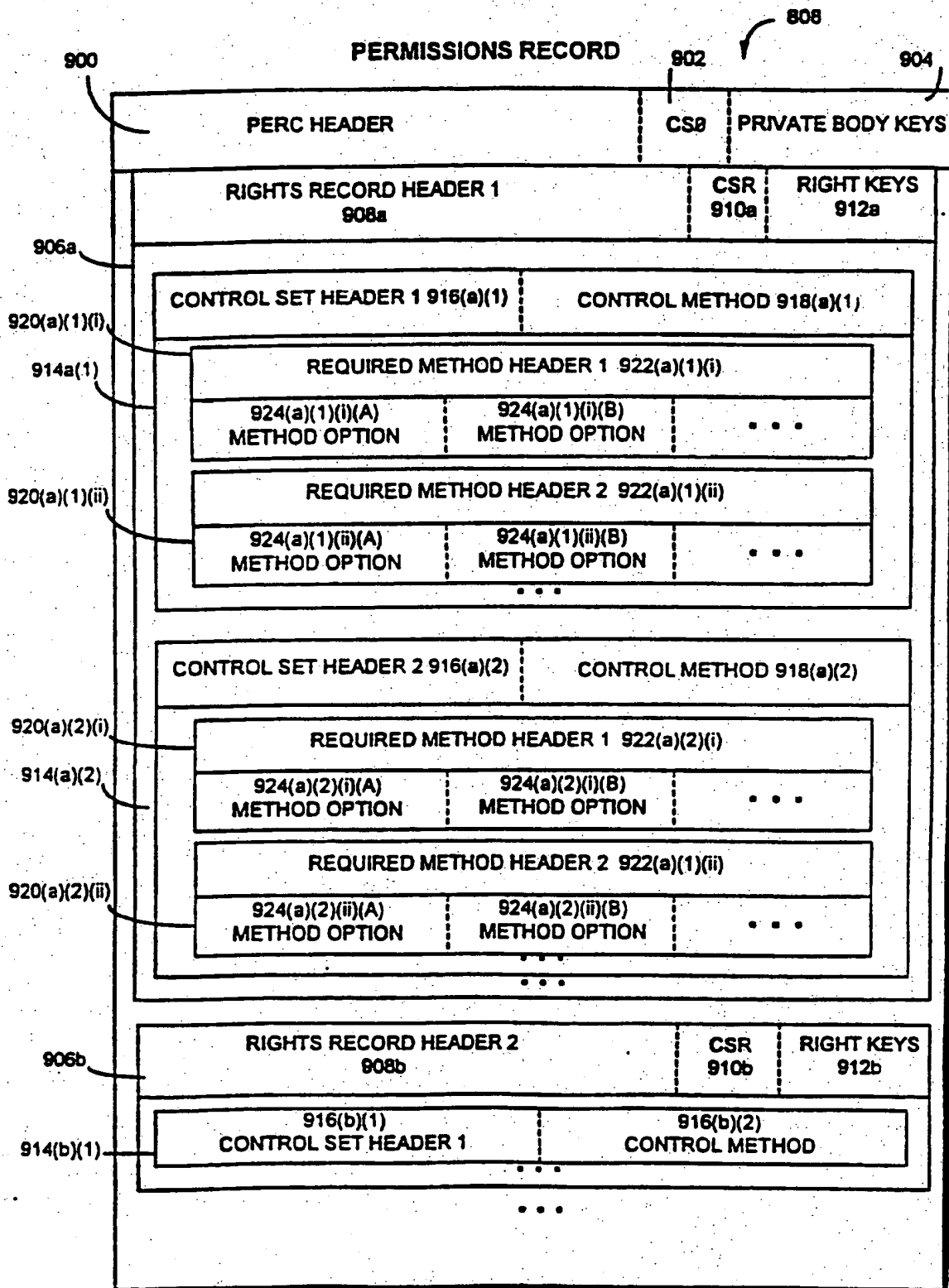
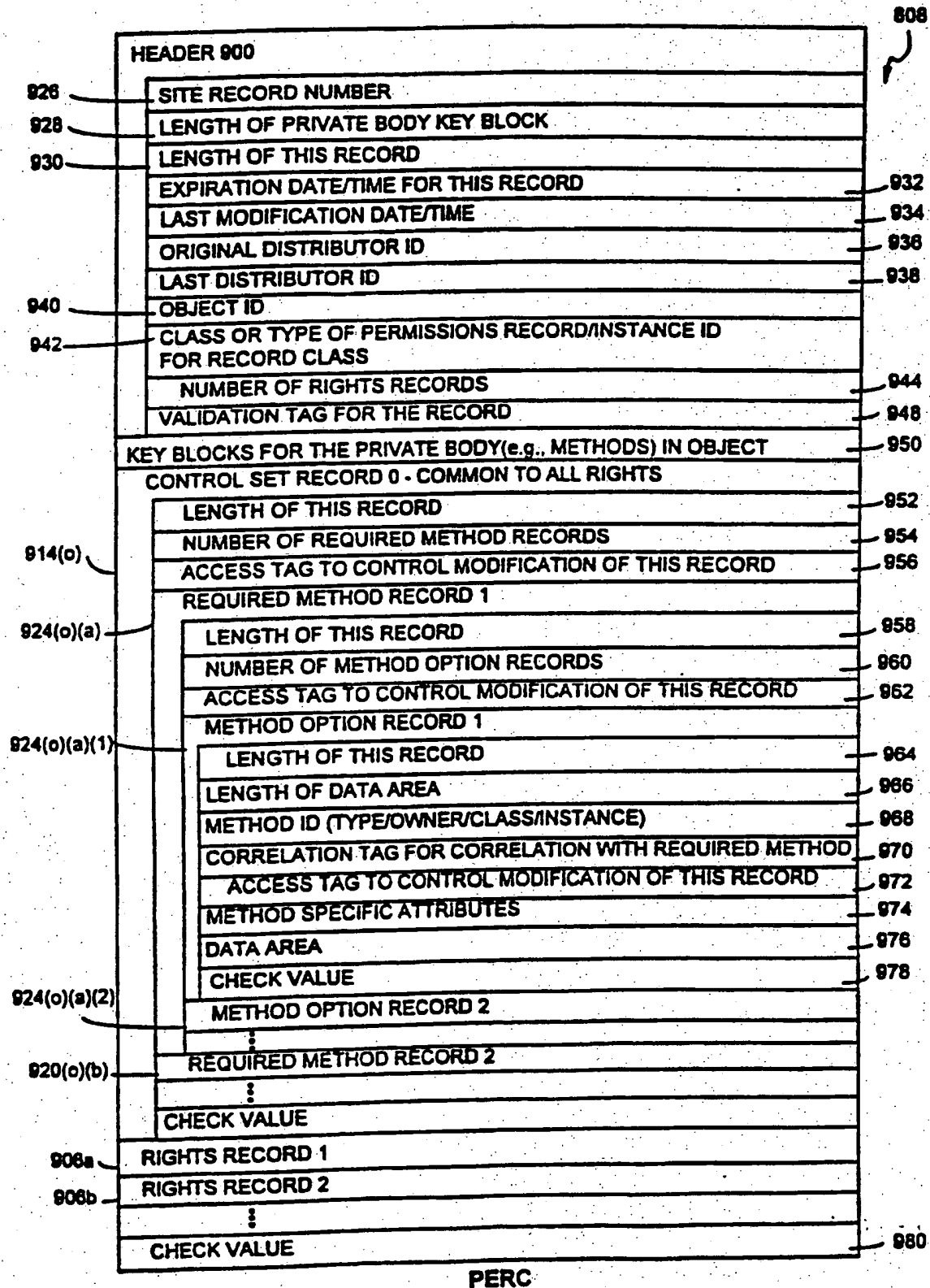
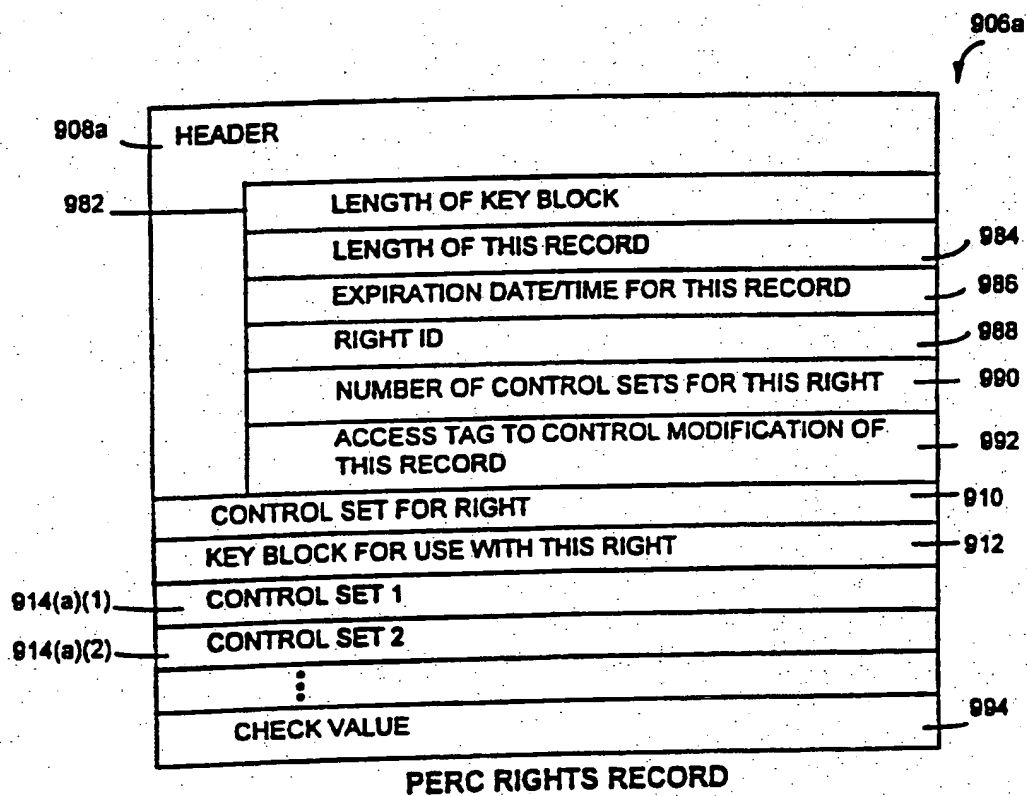


FIG. 26A



PERC

FIG. 26B



**FIG. 27**  
SHIPPING TABLE

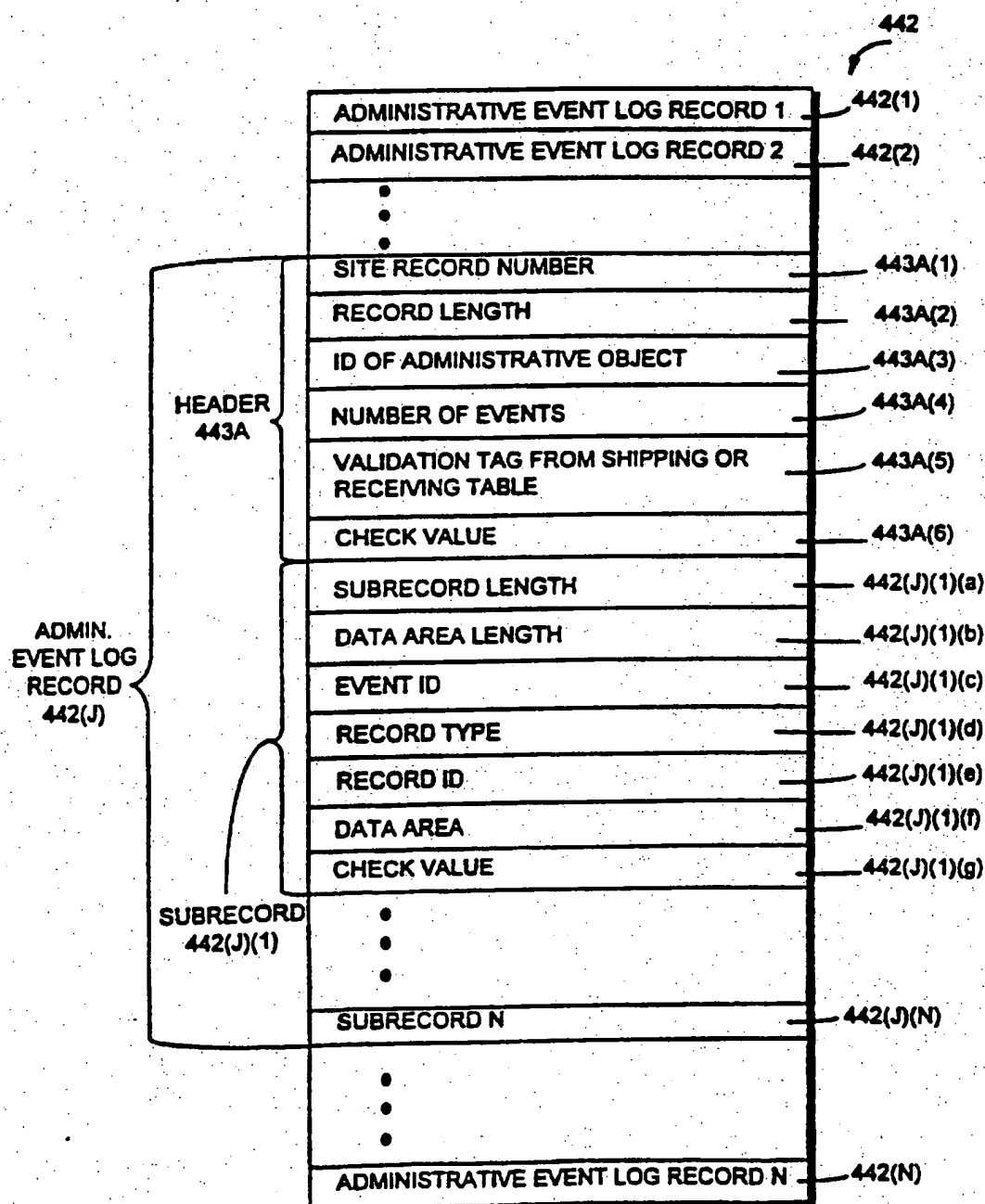
HEADER 444A	444A(1)		SITE RECORD NUMBER	444
			USER (GROUP) ID	444A(2)
			REF. TO "FIRST" COMPLETED OUTGOING SHIPPING RECORD	444A(3)
			REF. TO "LAST" COMPLETED OUTGOING SHIPPING RECORD	444A(4)
			REF. TO "FIRST" SCHEDULED OUTGOING SHIPPING RECORD	444A(5)
			REF. TO "LAST" SCHEDULED OUTGOING SHIPPING RECORD	444A(6)
			VALIDATION TAG FROM NAME SERVICES RECORD	444A(7)
			VALIDATION TAG FOR "FIRST" OUTGOING SHIPPING RECORD(S)	444A(8)
			CHECK VALUE	444A(9)
SHIPPING RECORD 445(1)			SITE RECORD NUMBER	445(1)(A)
			FIRST DATE/TIME FOR SCHEDULED SHIPMENT	445(1)(B)
			LAST DATE/TIME FOR SCHEDULED SHIPMENT	445(1)(C)
			ACTUAL DATE/TIME OF COMPLETED SHIPMENT	445(1)(D)
			OBJECT ID OF ADMINISTRATIVE OBJECT (TO BE) SHIPPED	445(1)(E)
			REF. TO ENTRY IN ADMINISTRATIVE EVENT LOG	445(1)(F)
			REF. TO NAME SERVICES RECORD NAMING RECIPIENT	445(1)(G)
			PURPOSE OF SHIPMENT	445(1)(H)
			STATUS OF SHIPMENT	445(1)(I)
			REF. TO "PREVIOUS" OUTGOING SHIPPING RECORD	445(1)(J)
			REF. TO "NEXT" OUTGOING SHIPPING RECORD	445(1)(K)
			VALIDATION TAG FROM HEADER	445(1)(L)
			VALIDATION TAG TO ADMINISTRATIVE EVENT LOG	445(1)(M)
			VALIDATION TAG TO NAME SERVICES RECORD	445(1)(N)
			VALIDATION TAG FROM PREVIOUS RECORD	445(1)(O)
			VALIDATION TAG TO NEXT RECORD	445(1)(P)
			CHECK VALUE	445(1)(Q)
			⋮	
			SHIPPING RECORD N	445(1)(R)

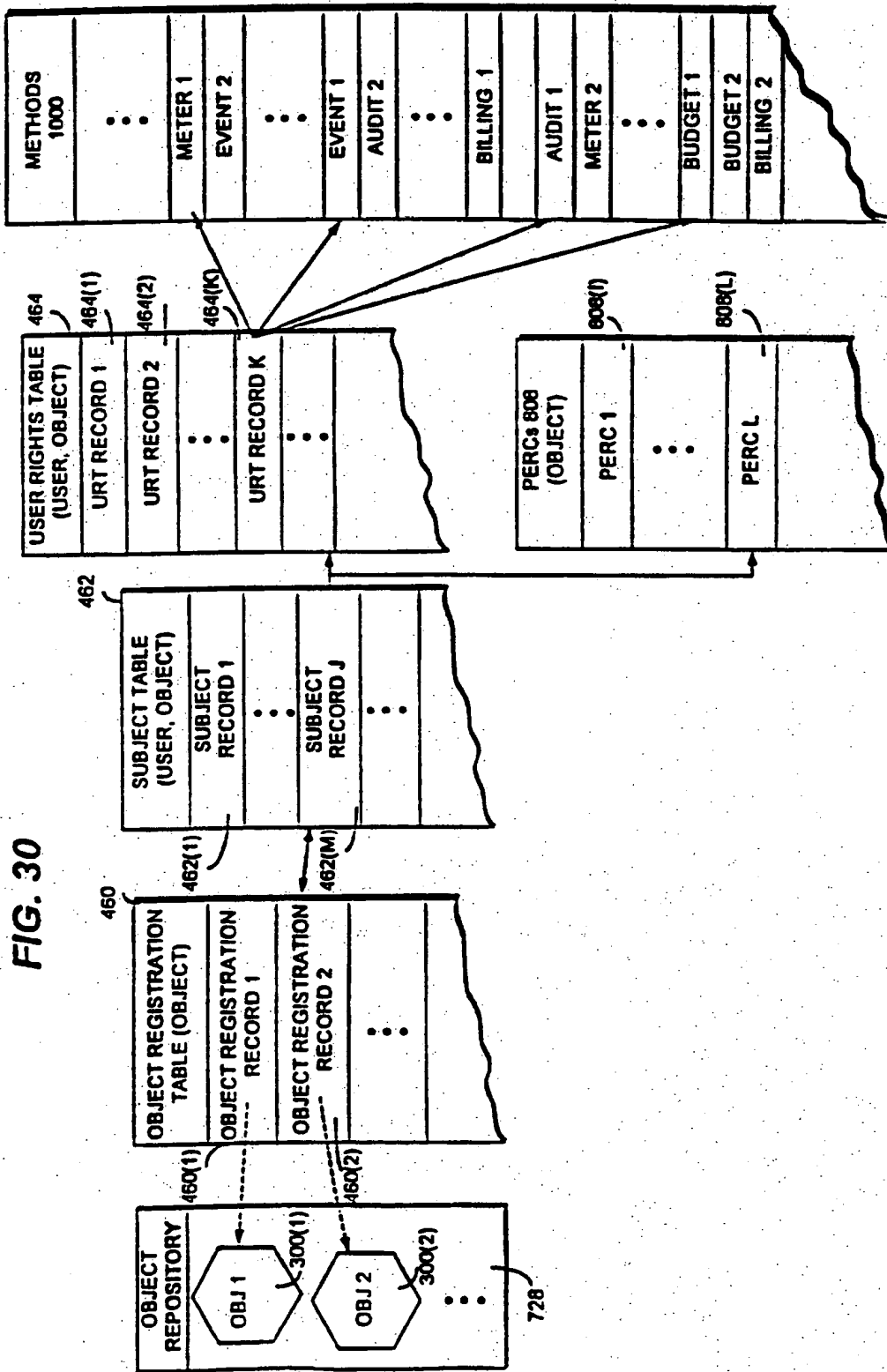
**FIG. 28**  
RECEIVING TABLE

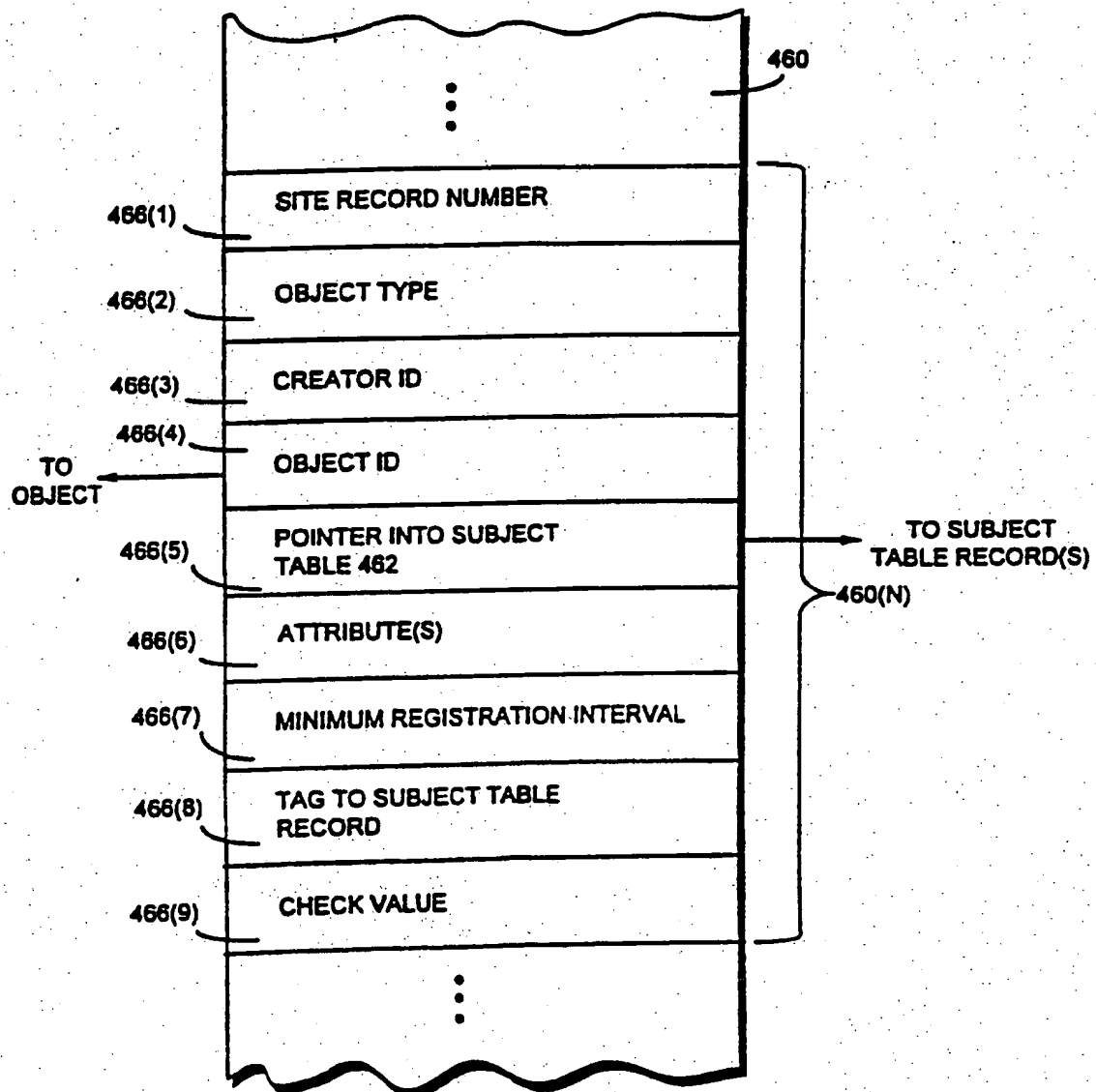
		446A(1)	
HEADER 446A	SITE RECORD NUMBER		446
	USER (GROUP) ID		446A(2)
	REF. TO "FIRST" COMPLETED INCOMING RECEIVING RECORD		446A(3)
	REF. TO "LAST" COMPLETED INCOMING RECEIVING RECORD		446A(4)
	REF. TO "FIRST" SCHEDULED INCOMING RECEIVING RECORD		446A(5)
	REF. TO "LAST" SCHEDULED INCOMING RECEIVING RECORD		446A(6)
	VALIDATION TAG FROM NAME SERVICES RECORD		446A(7)
	VALIDATION TAG FOR "FIRST" INCOMING RECEIVING RECORD(S)		446A(8)
	CHECK VALUE		446A(9)
RECEIVING RECORD 447(1)	SITE RECORD NUMBER		447(1)(A)
	FIRST DATE/TIME FOR SCHEDULED RECEPTION		447(1)(B)
	LAST DATE/TIME FOR SCHEDULED RECEPTION		447(1)(C)
	ACTUAL DATE/TIME OF COMPLETED RECEPTION		447(1)(D)
	OBJECT ID OF ADMINISTRATIVE OBJECT (TO BE) RECEIVED		447(1)(E)
	REF. TO ENTRY IN ADMINISTRATIVE EVENT LOG		447(1)(F)
	REF. TO NAME SERVICES RECORD NAMING SENDER		447(1)(G)
	PURPOSE OF RECEPTION		447(1)(H)
	STATUS OF RECEPTION		447(1)(I)
	REF. TO "PREVIOUS" INCOMING RECEIVING RECORD		447(1)(J)
	REF. TO "NEXT" INCOMING RECEIVING RECORD		447(1)(K)
	VALIDATION TAGS		447(1)(L)
	CHECK VALUE		447(1)(M)
	⋮		
	RECEIVING RECORD N		447(2)



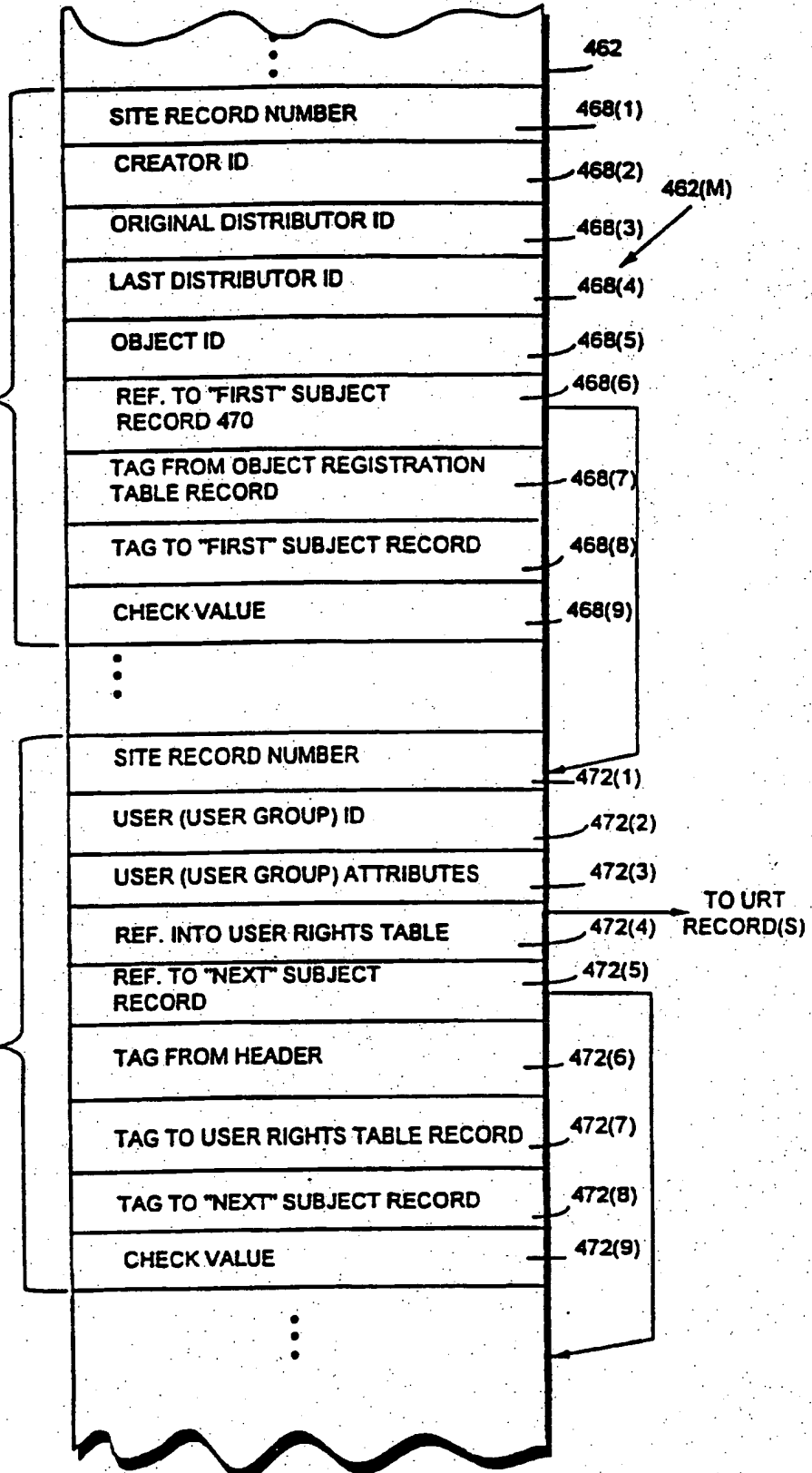
**FIG. 29**  
ADMINISTRATIVE EVENT LOG







**FIG. 31**  
OBJECT REGISTRATION TABLE

**FIG. 32**SUBJECT  
TABLE"HEADER"  
468SUBJECT  
RECORD  
470(1)

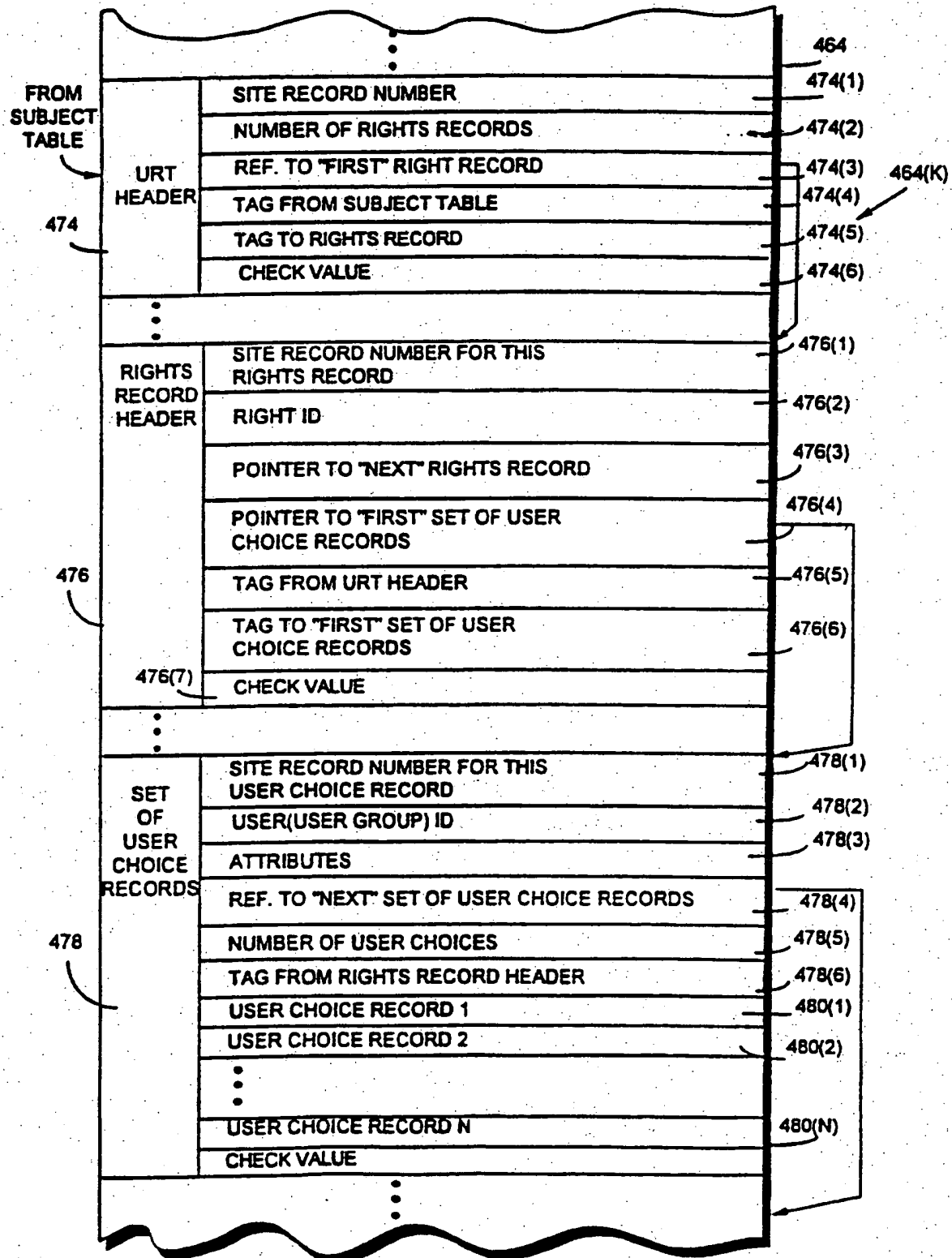
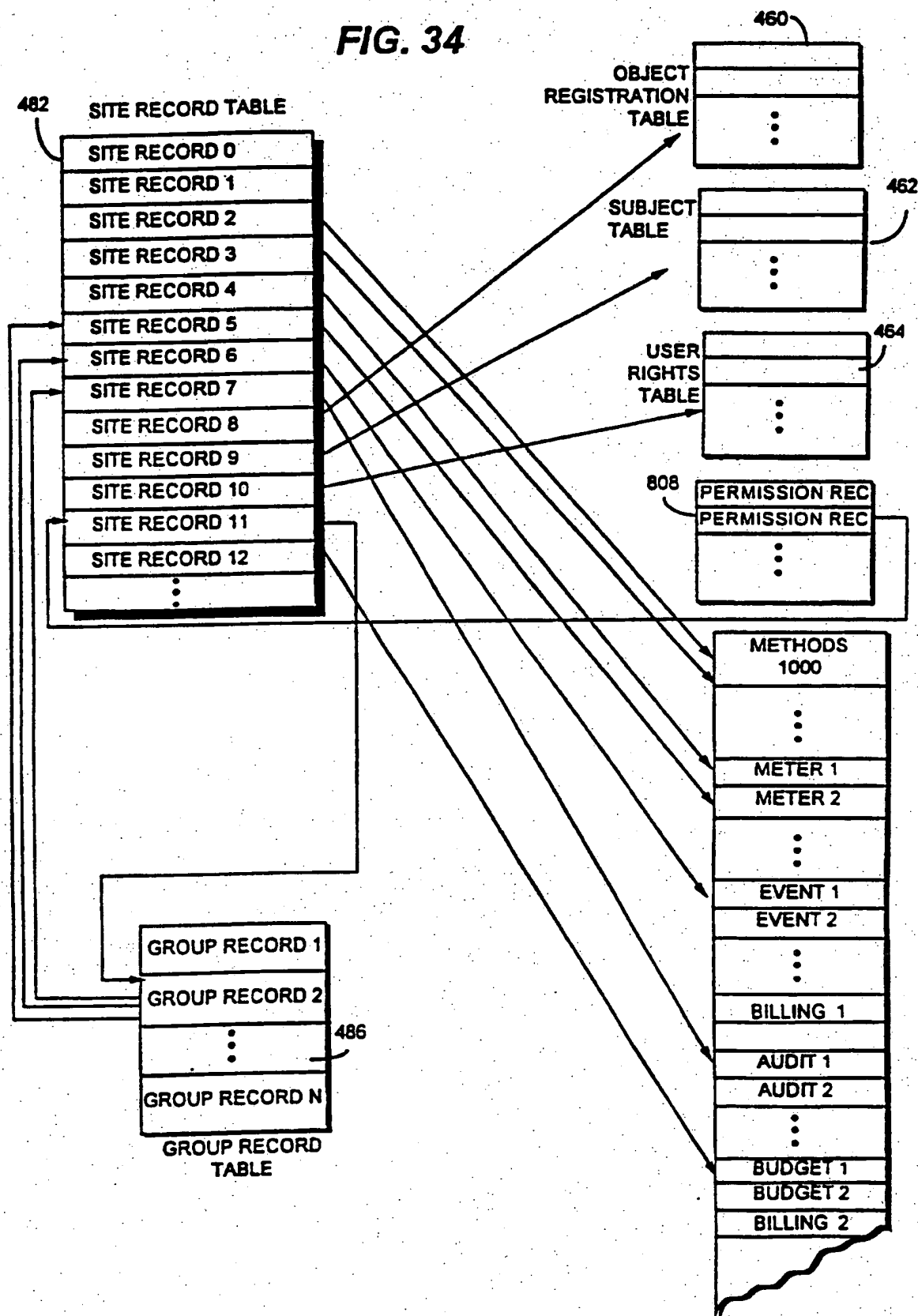
**FIG. 33** USER RIGHTS TABLE

FIG. 34



**FIG. 34A****SITE RECORD**

482(J)		482
TYPE OF RECORD		484(1)
OWNER OR CREATOR OF RECORD		484(2)
CLASS		484(3)
INSTANCE		484(4)
TYPE SPECIFIC DESCRIPTOR (e.g., OBJECT ID) ASSOCIATED WITH RECORD		484(5)
TABLE IN WHICH THE RECORD IS LOCATED		484(6)
POINTER - OFFSET, WITHIN THE TABLE, TO WHERE THE RECORD BEGINS		484(7)
RECORD LENGTH		484(8)
VALIDATION TAG FOR RECORD		484(9)
CHECK VALUE		484(10)

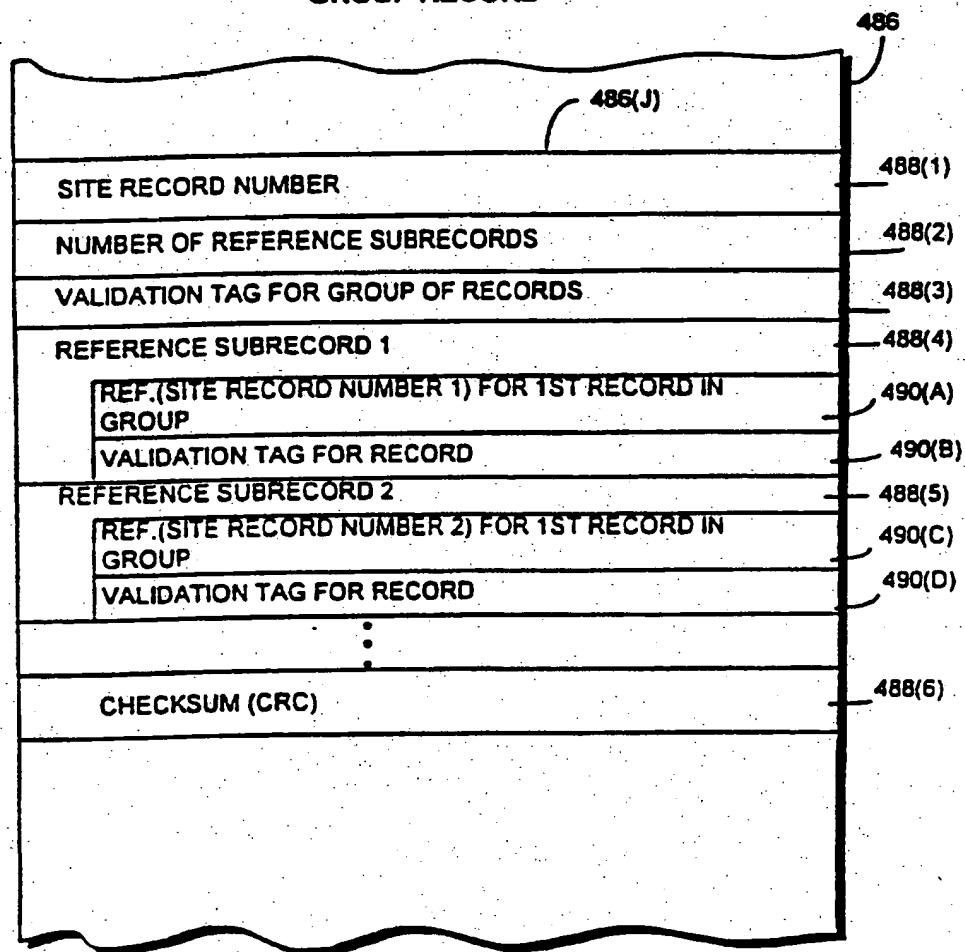
**FIG. 34B****GROUP RECORD**



FIG. 35

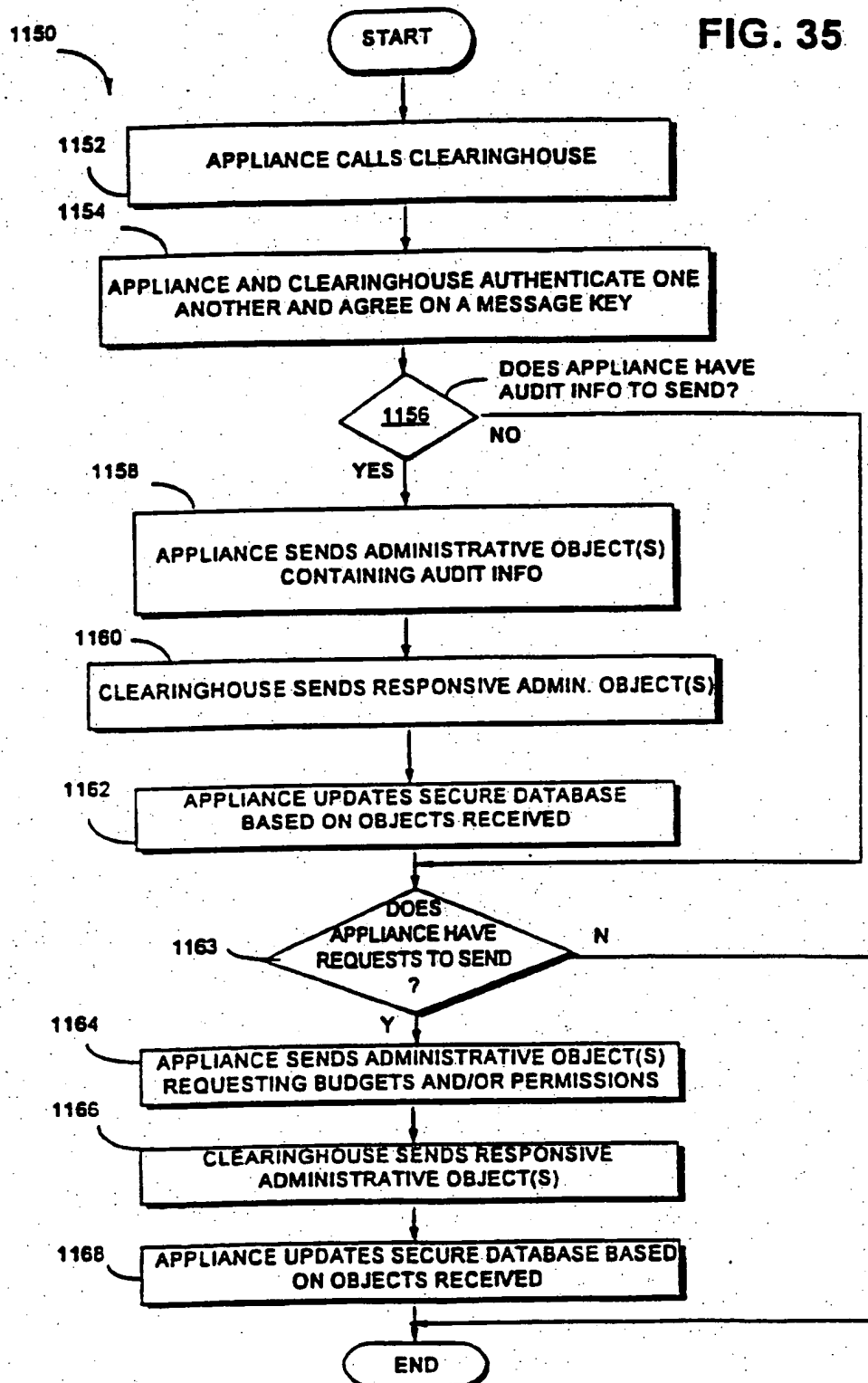


FIG. 36

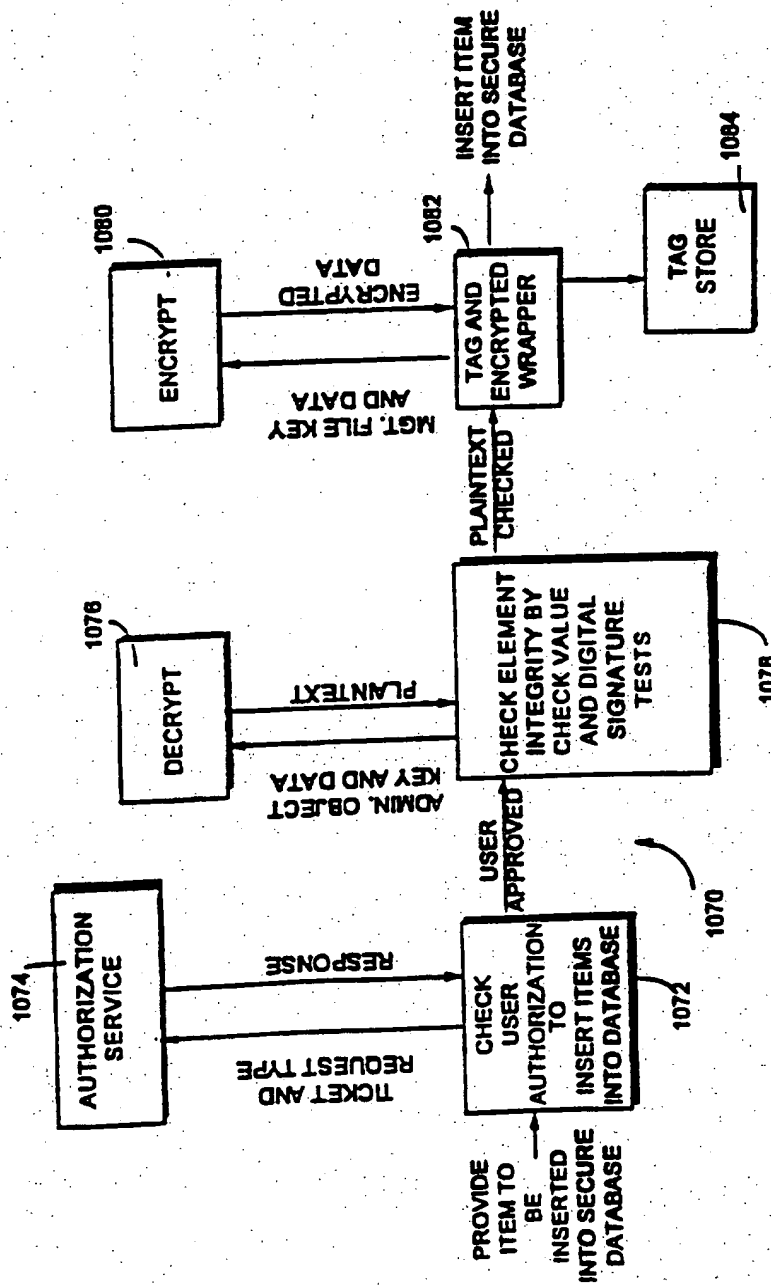


FIG. 37

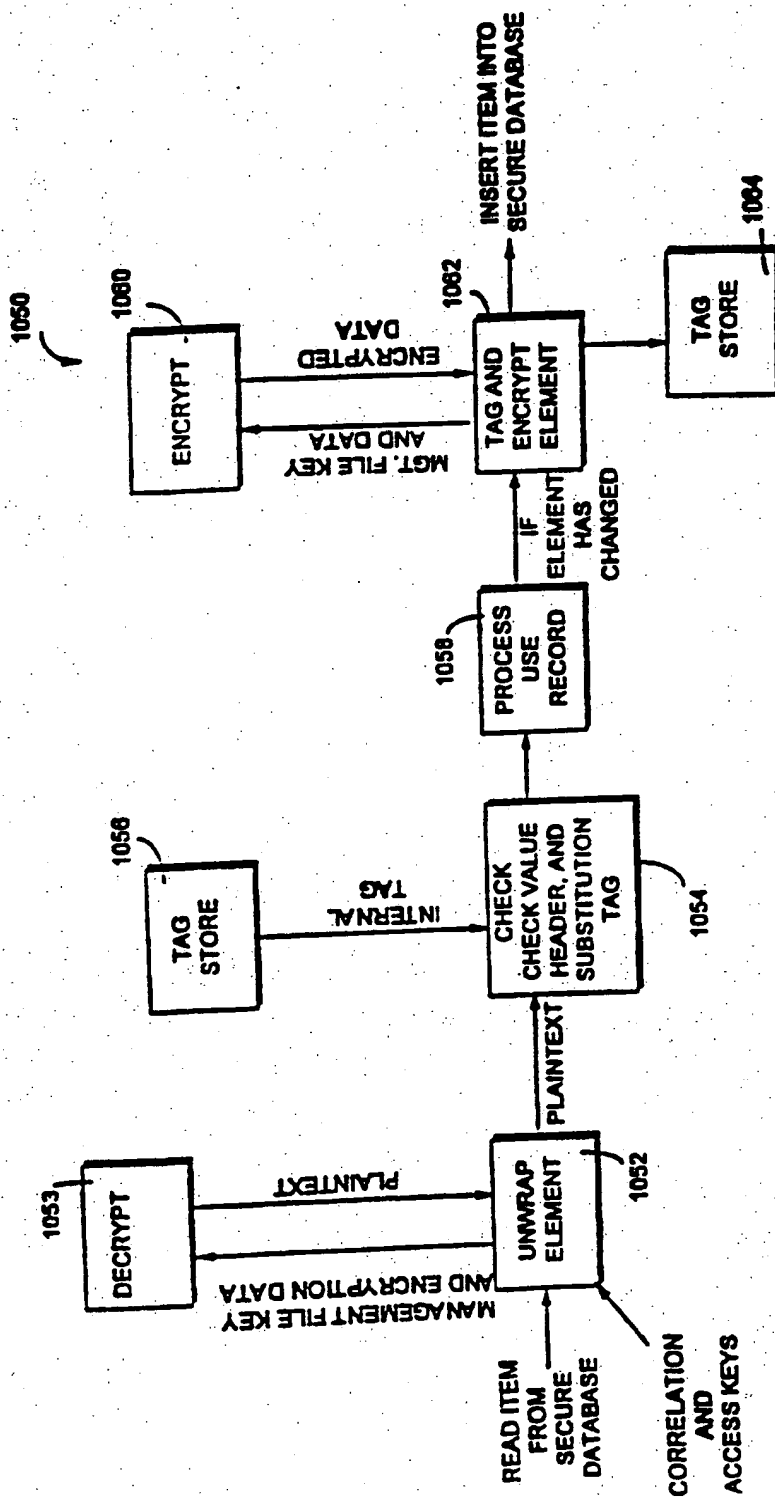
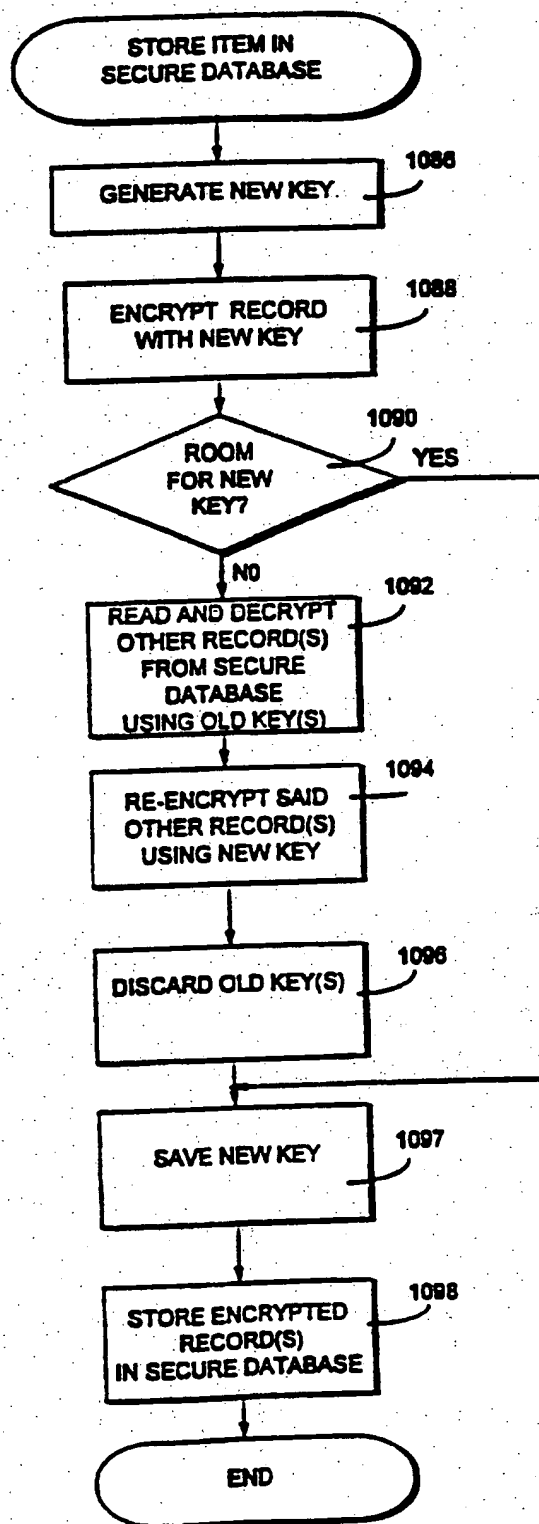
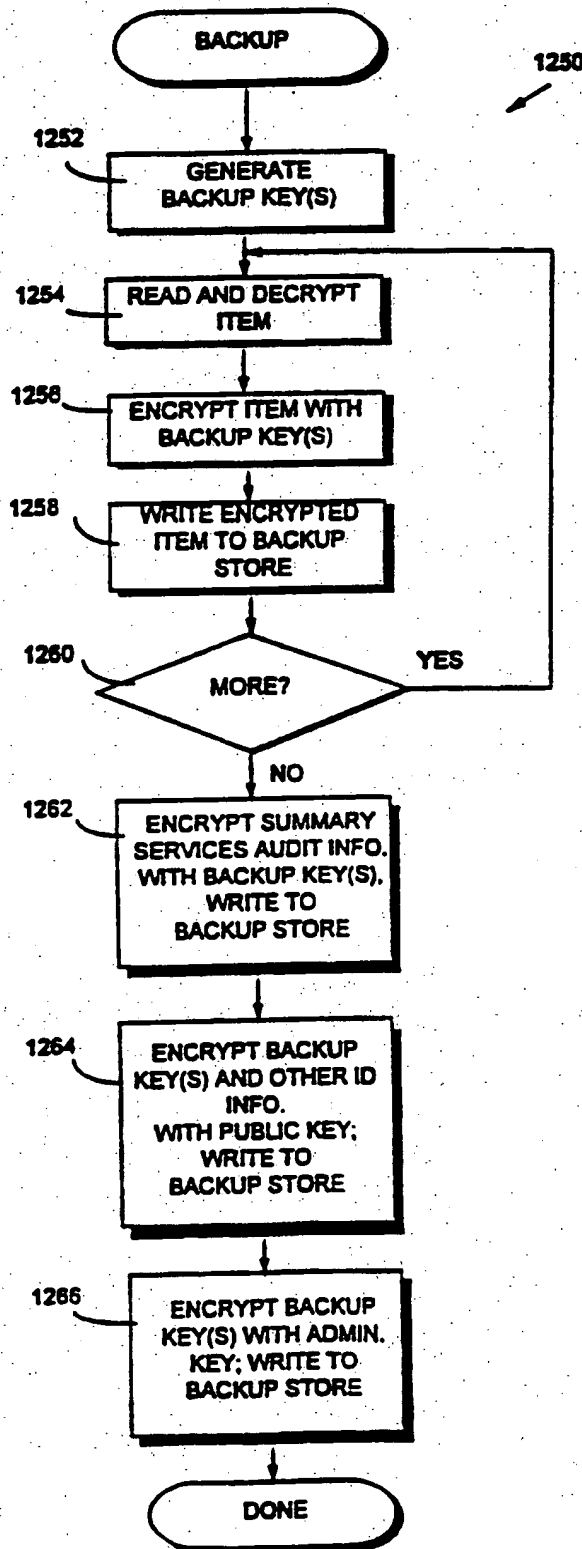
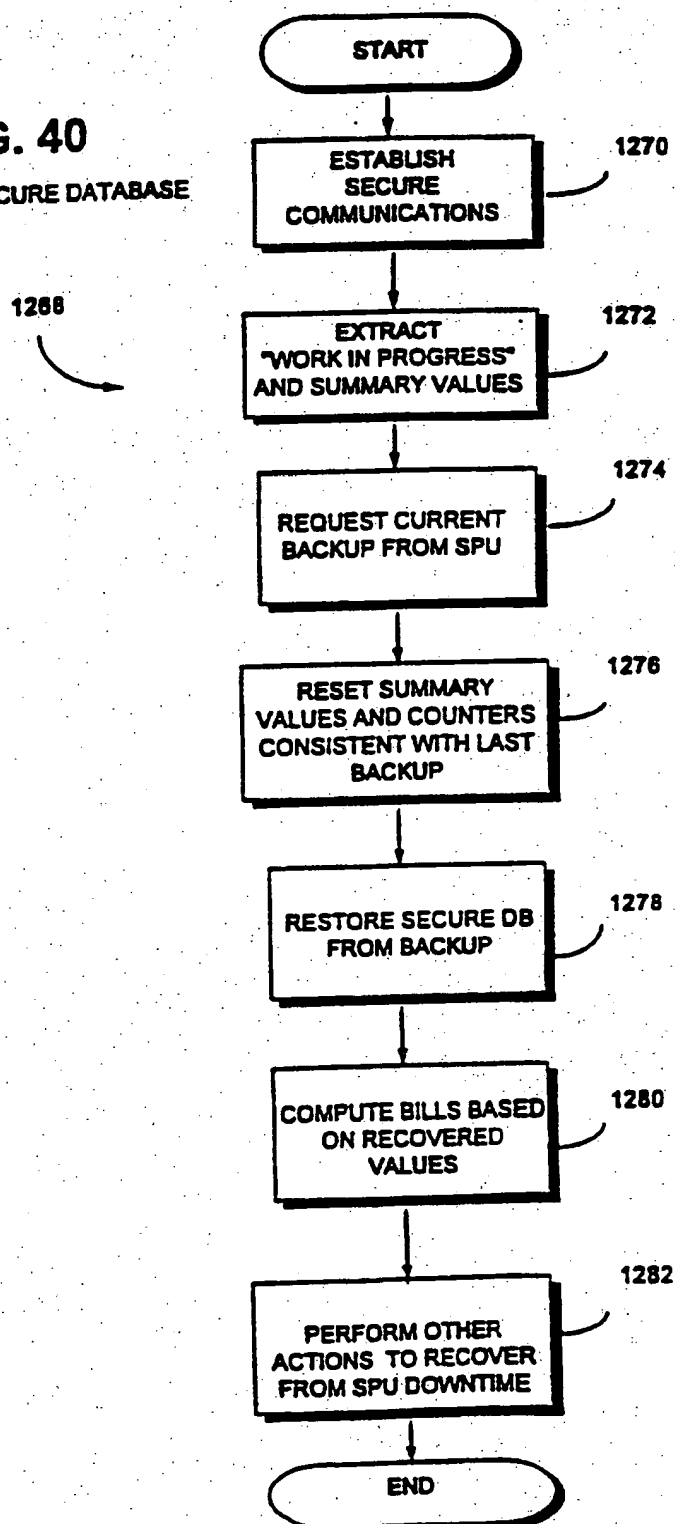


FIG. 38



**FIG. 39**  
BACKUP

**FIG. 40**  
RECOVER SECURE DATABASE



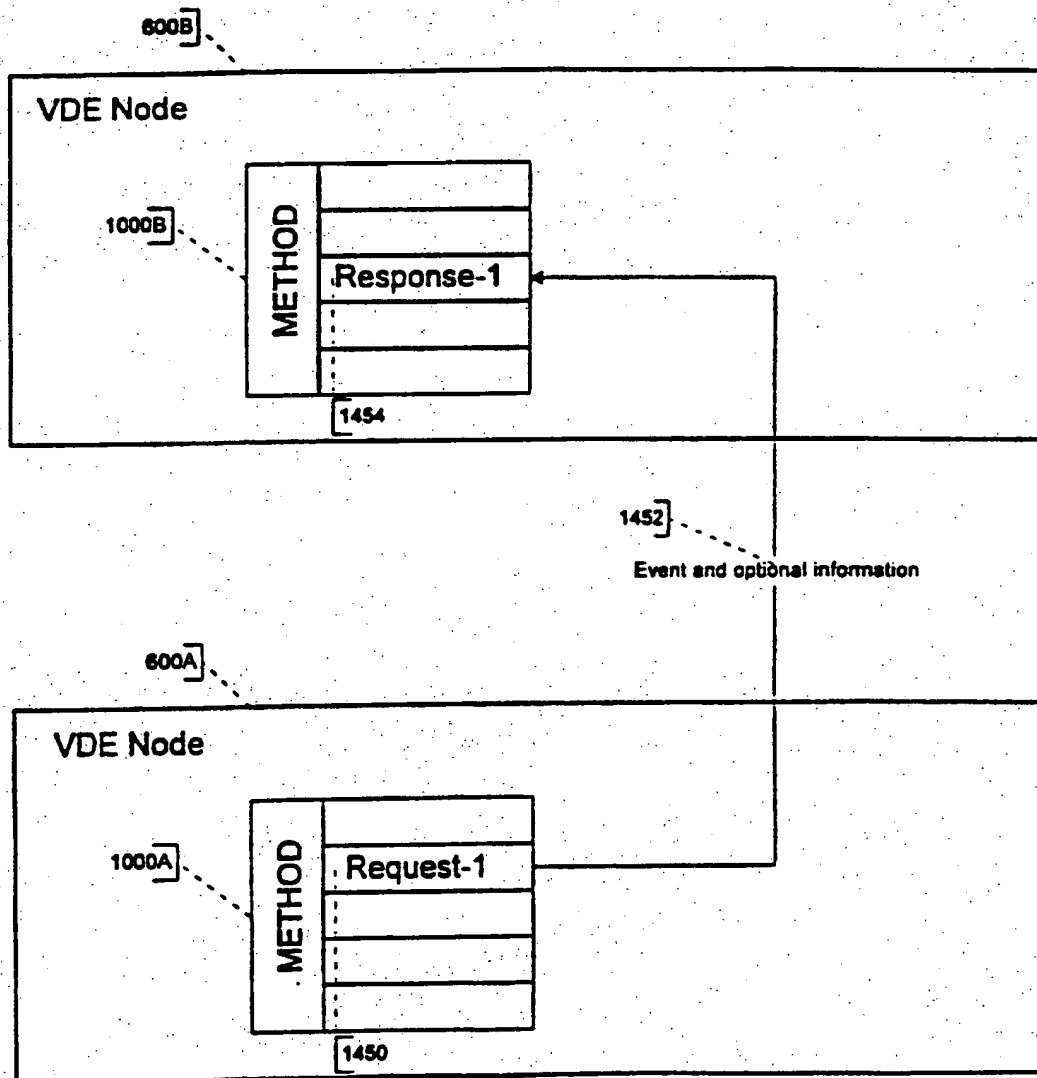


Figure 41a

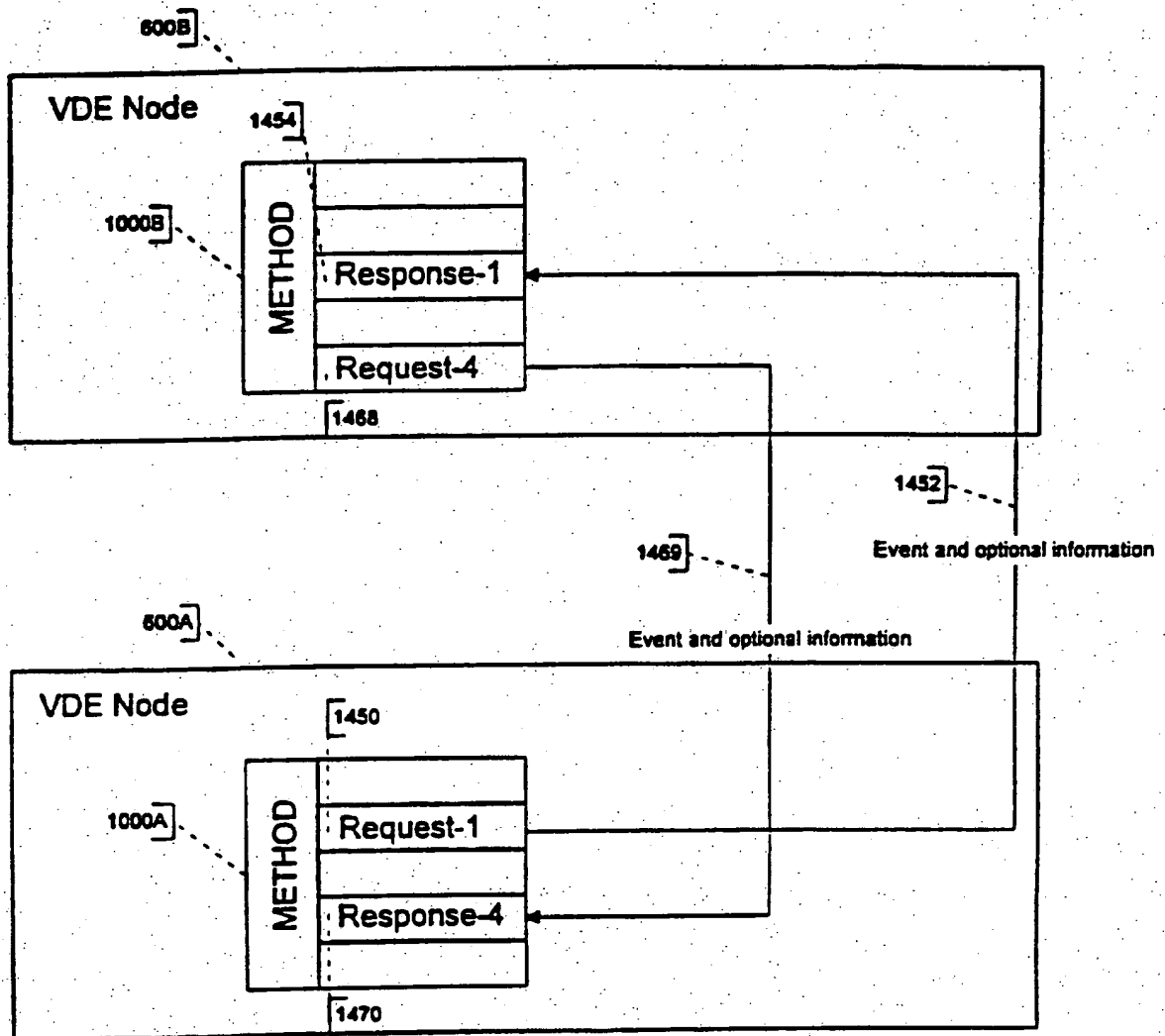


Figure 41b



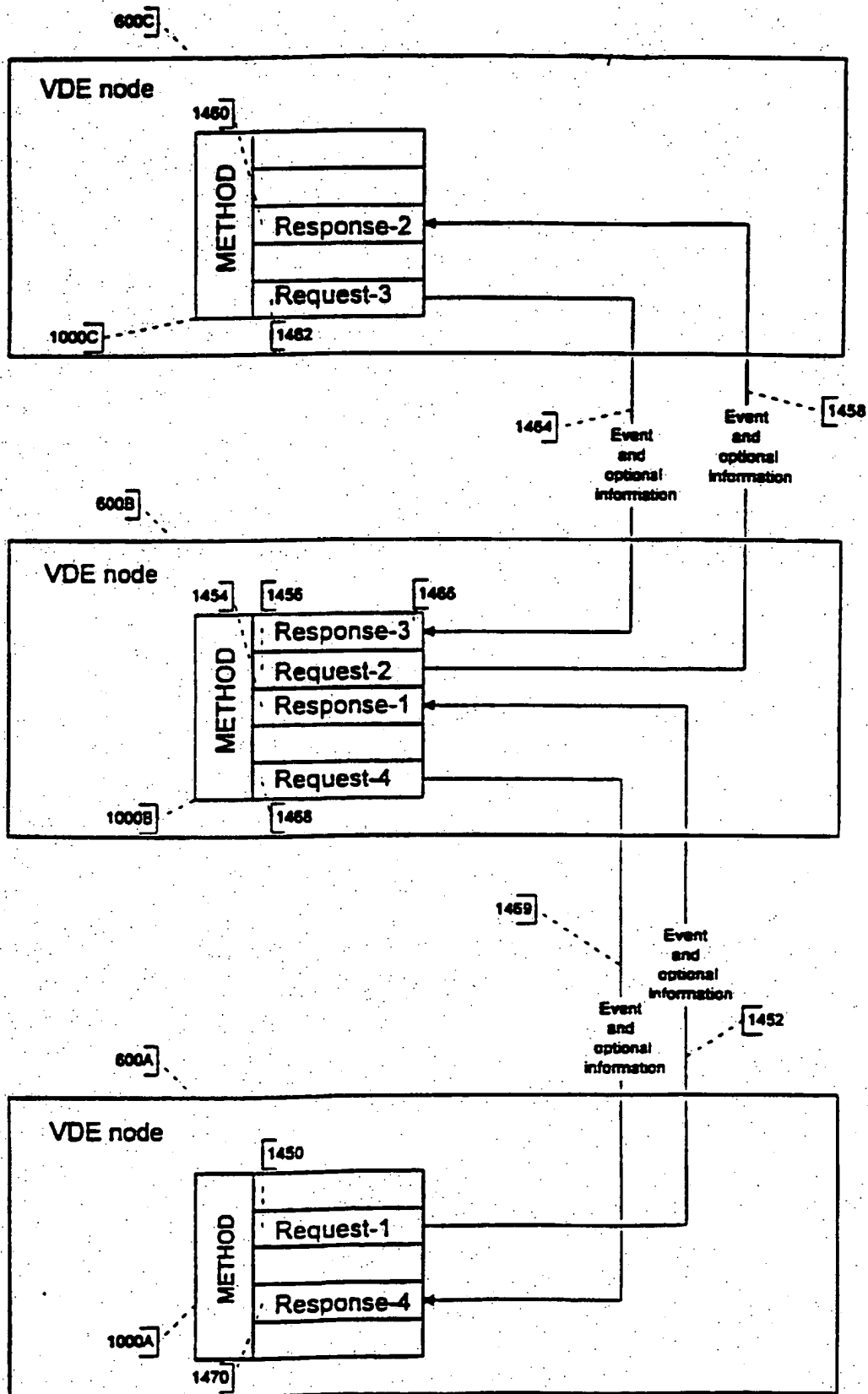


Figure 41c

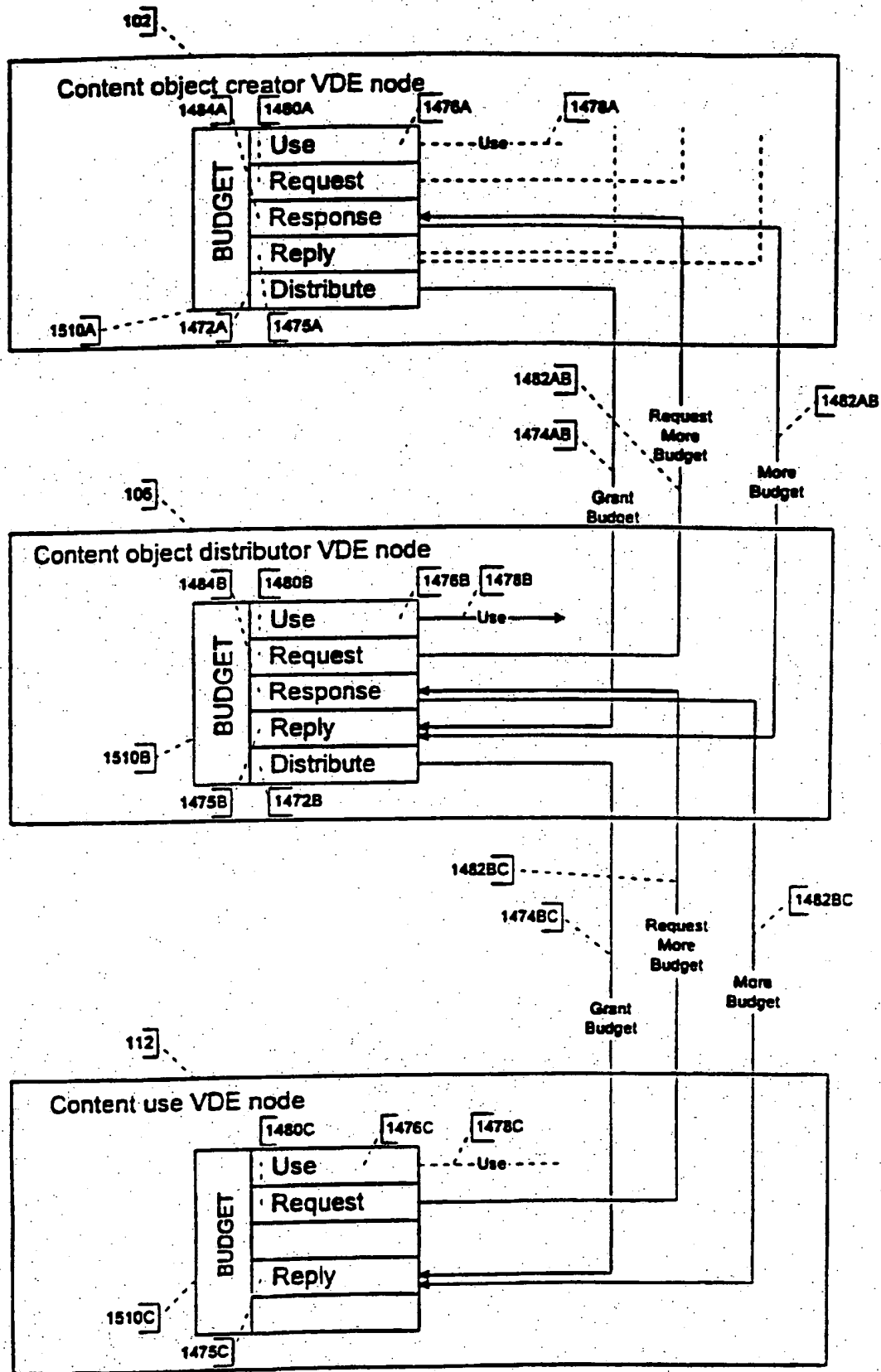


Figure 41d

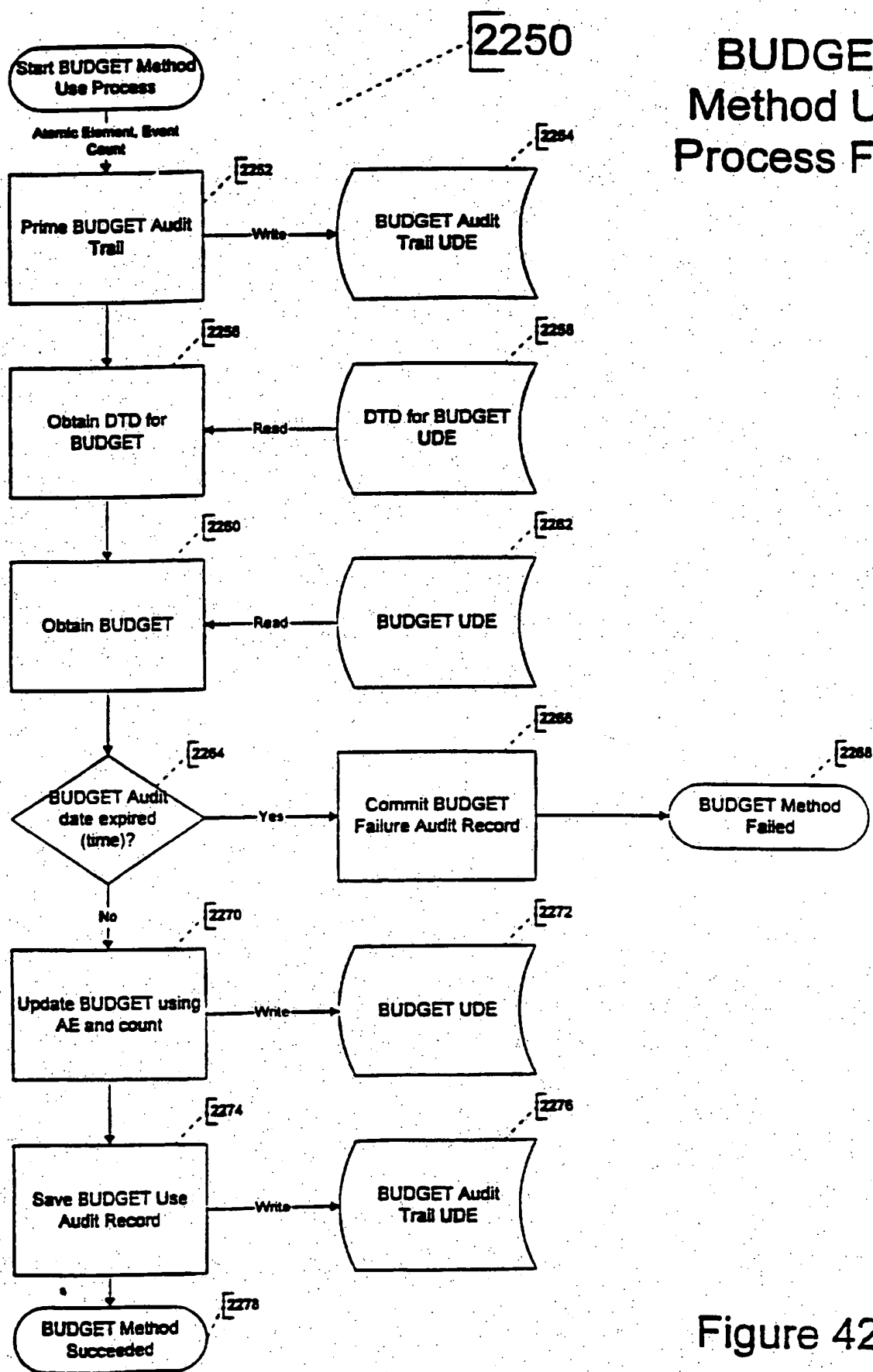


Figure 42a

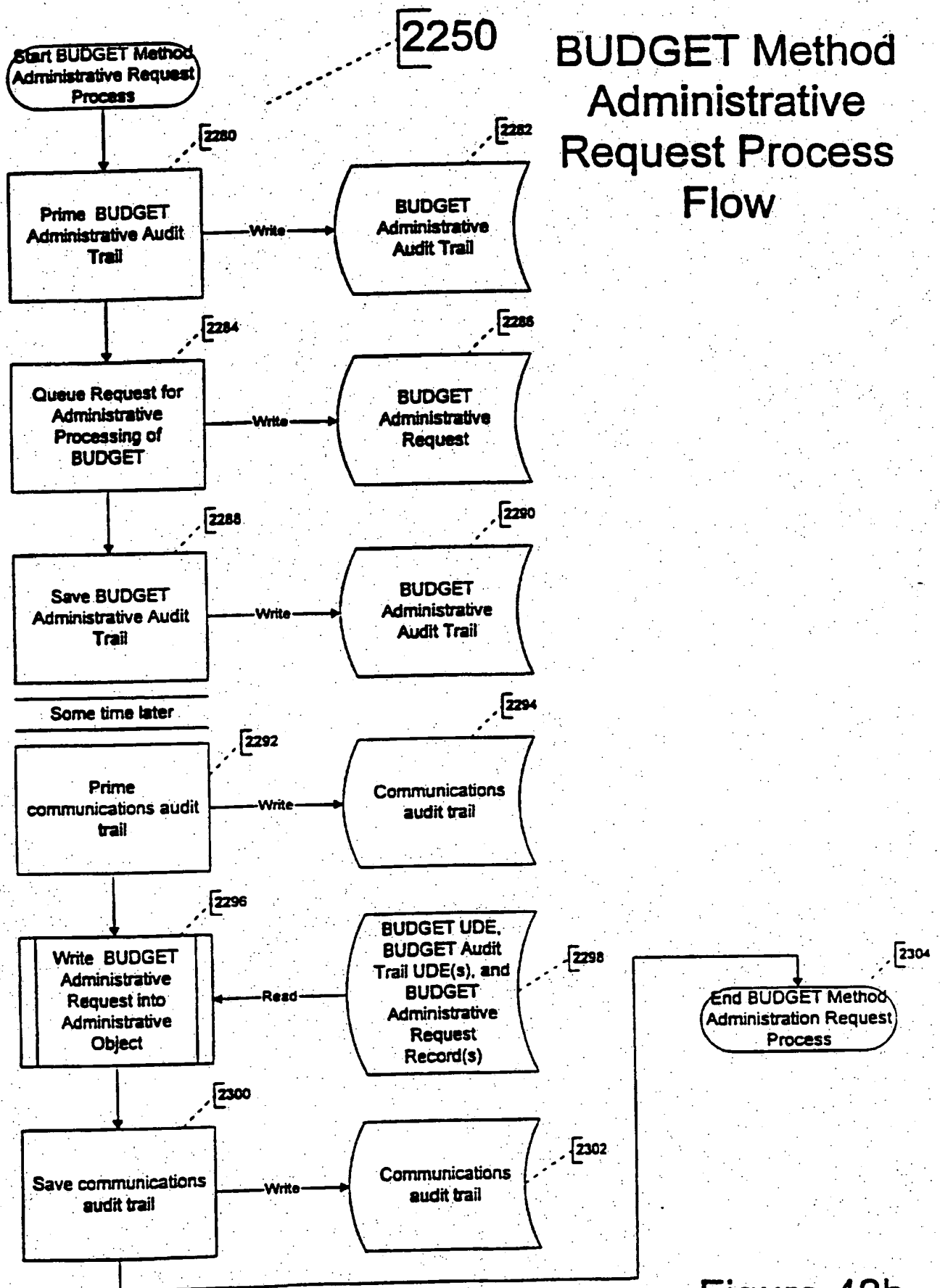


Figure 42b

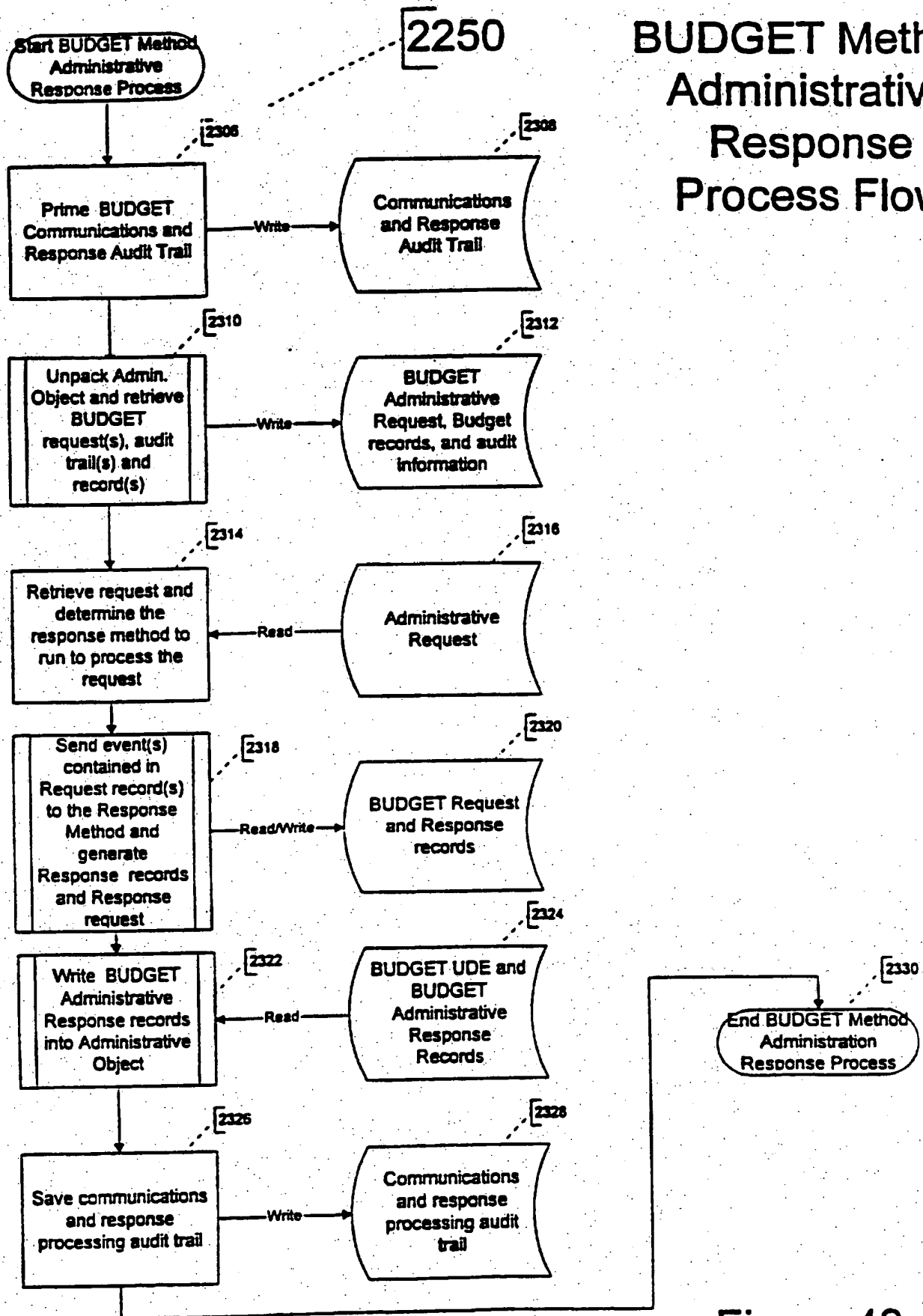


Figure 42c

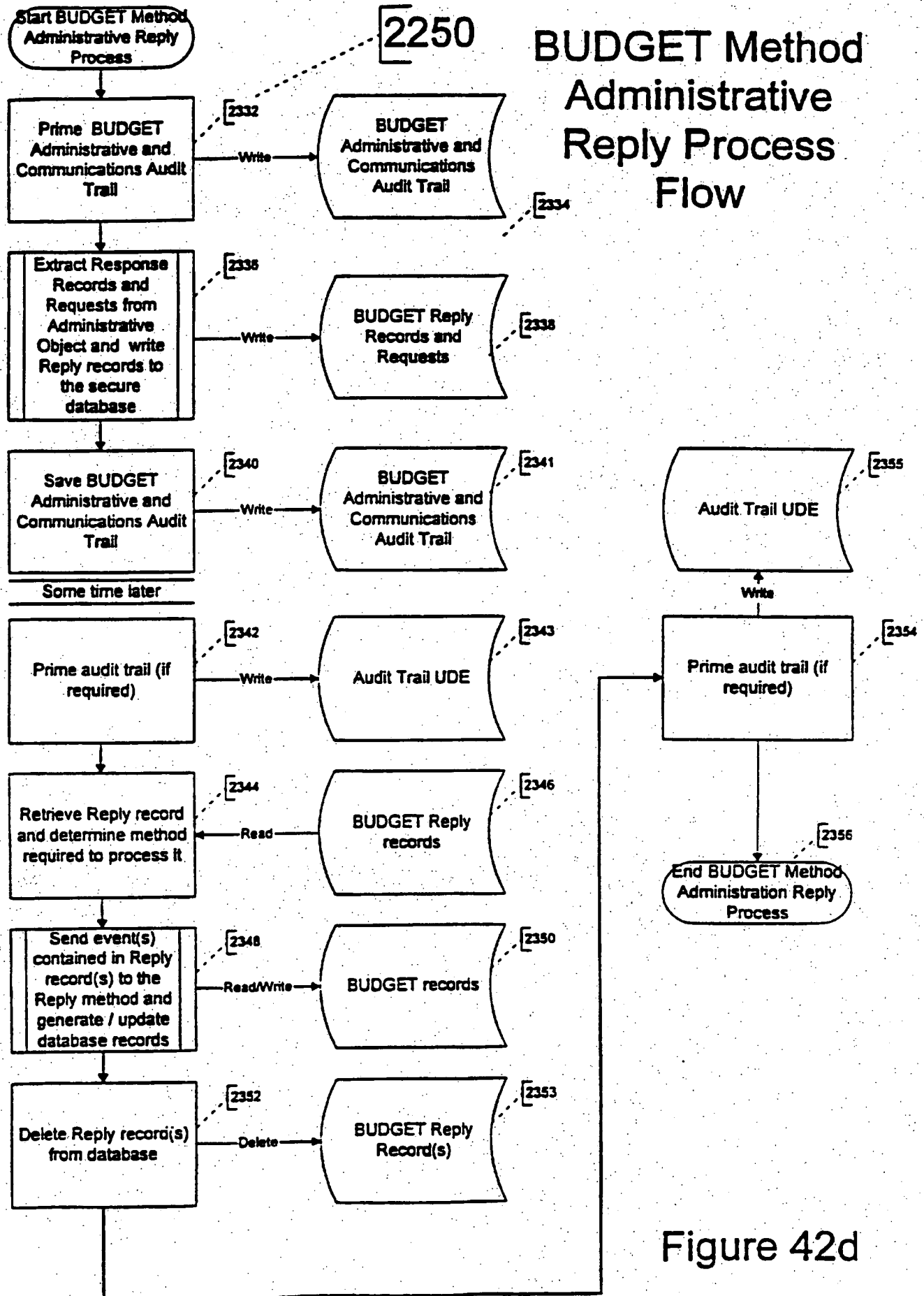
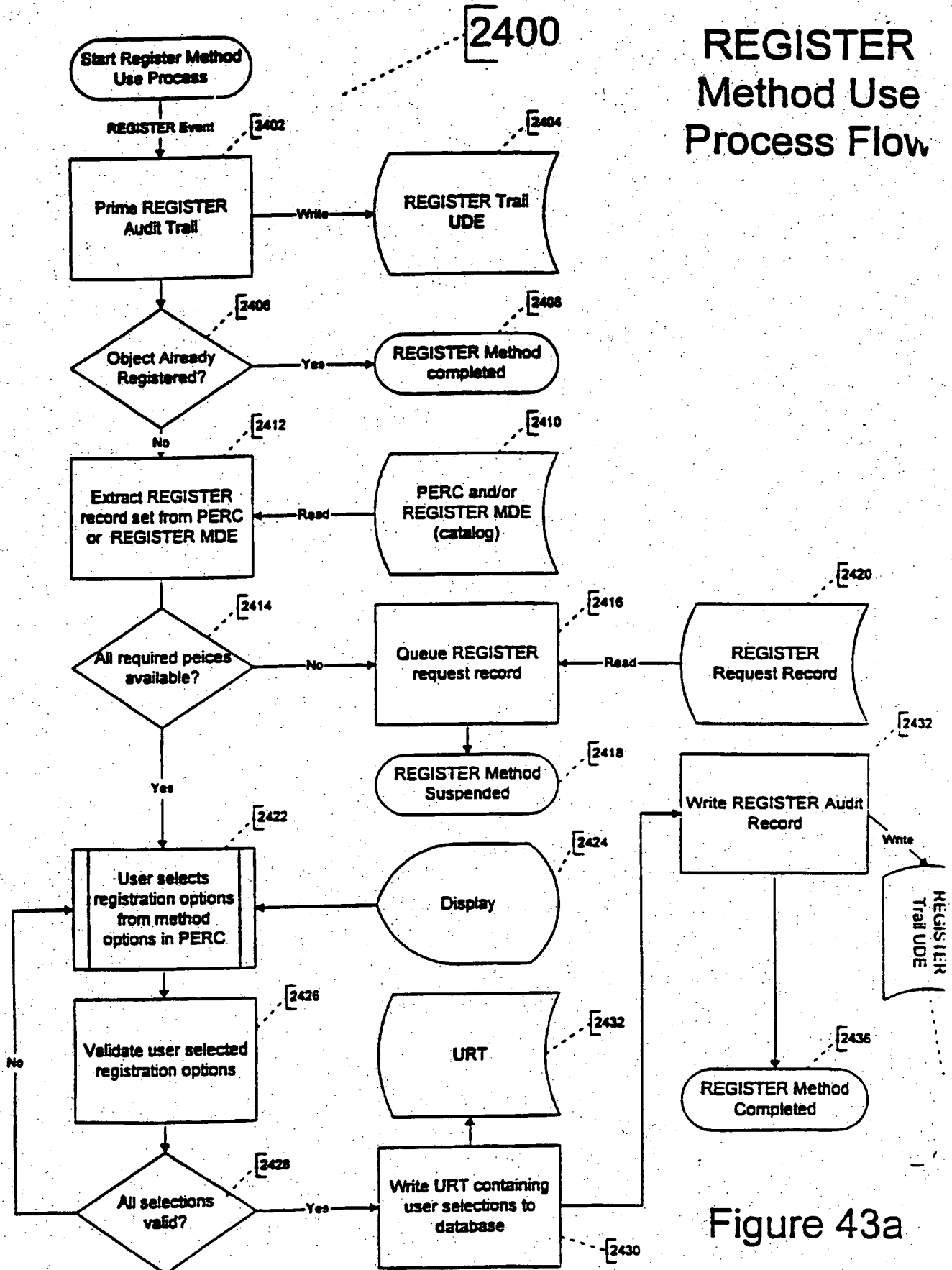


Figure 42d

# REGISTER Method Use Process Flow



# REGISTER Method Administrative Request Process Flow

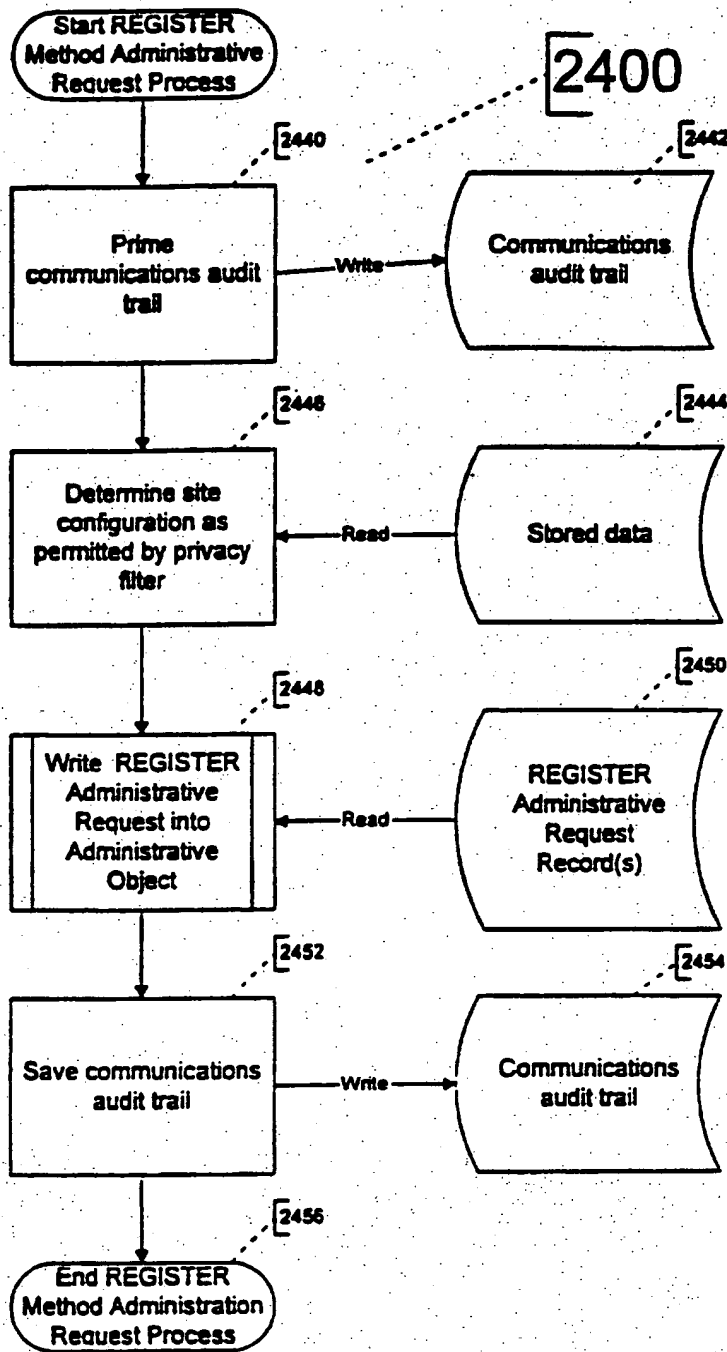
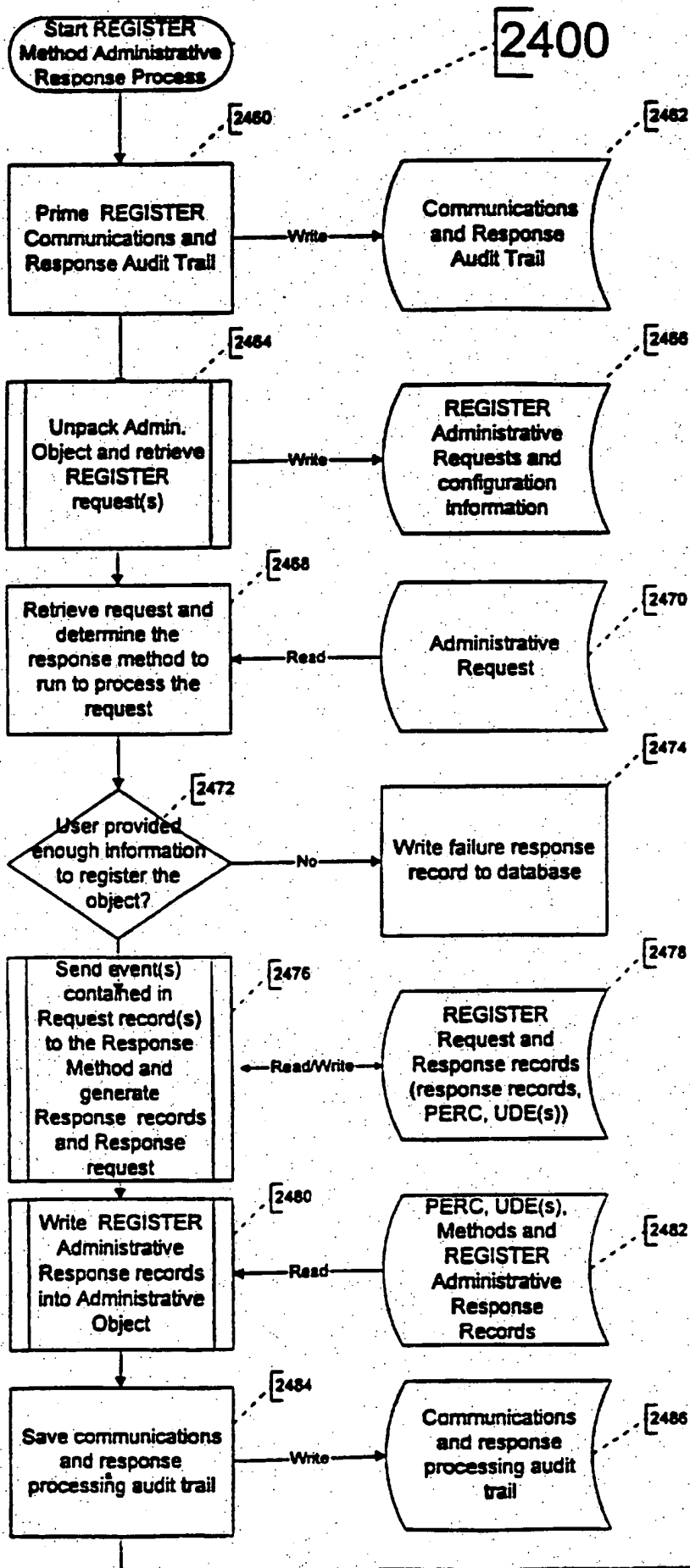


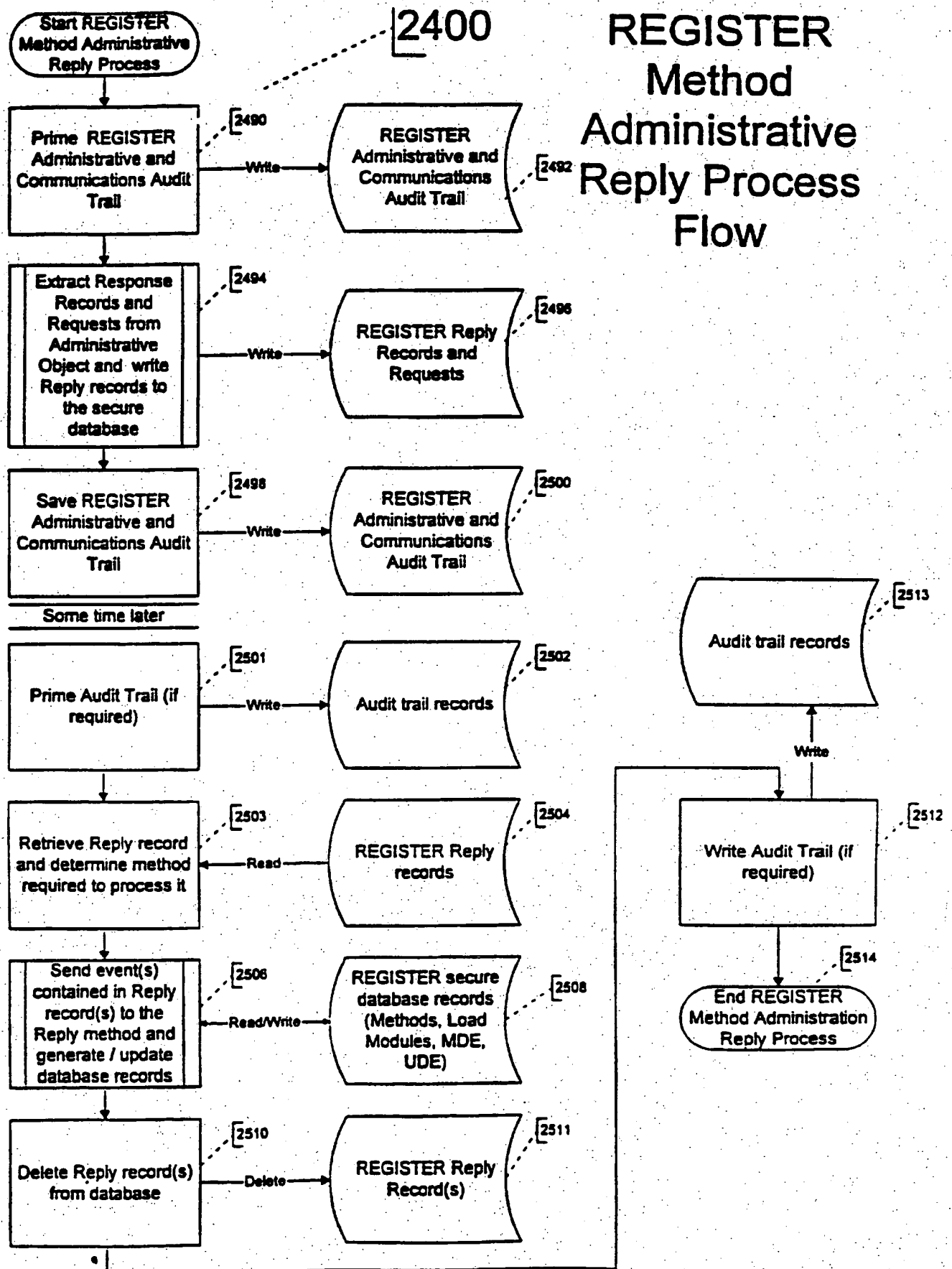
Figure 43b

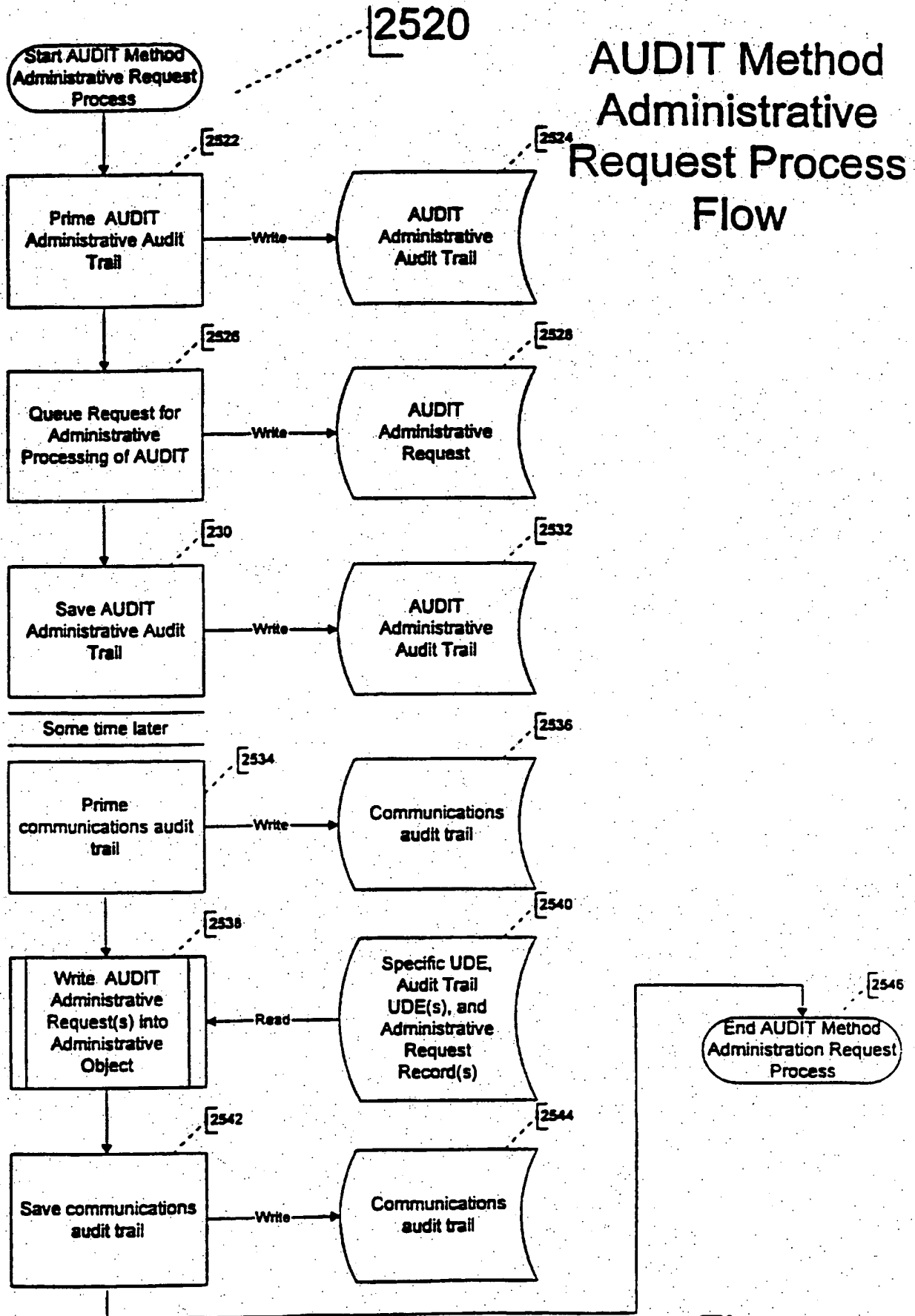




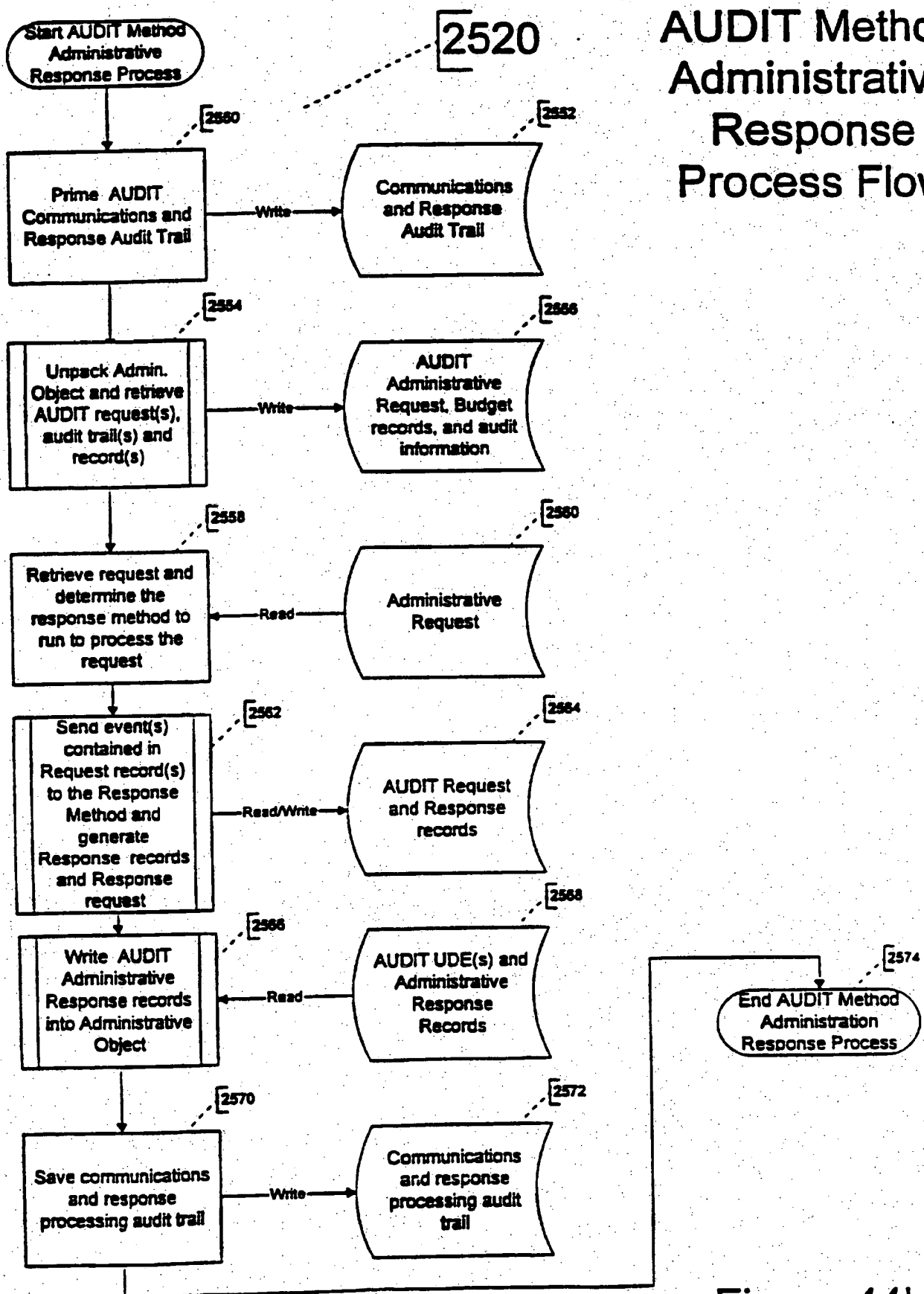
# REGISTER Method Administrative Response Process Flow

Figure 43c





# AUDIT Method Administrative Response Process Flow



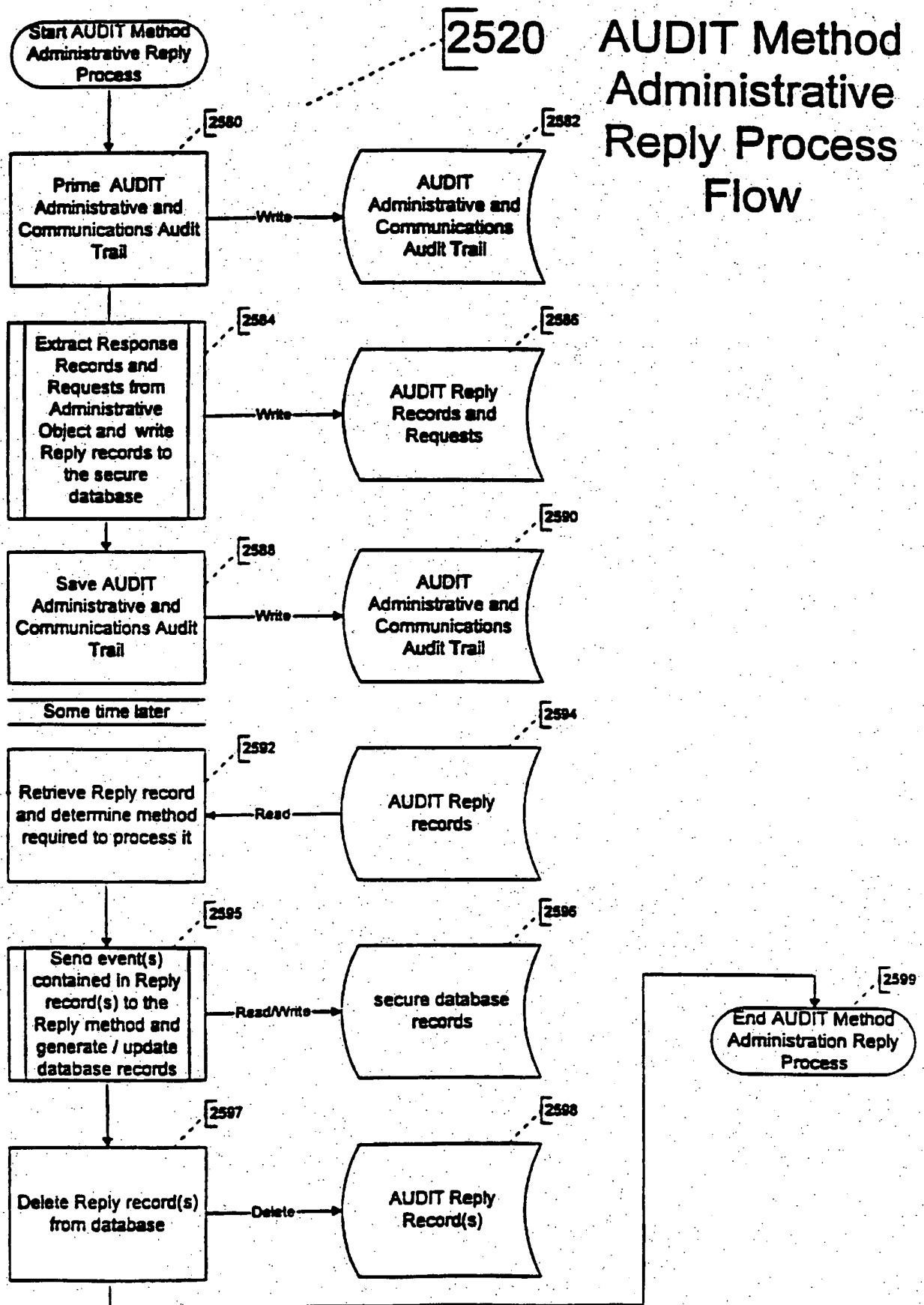


FIG. 45

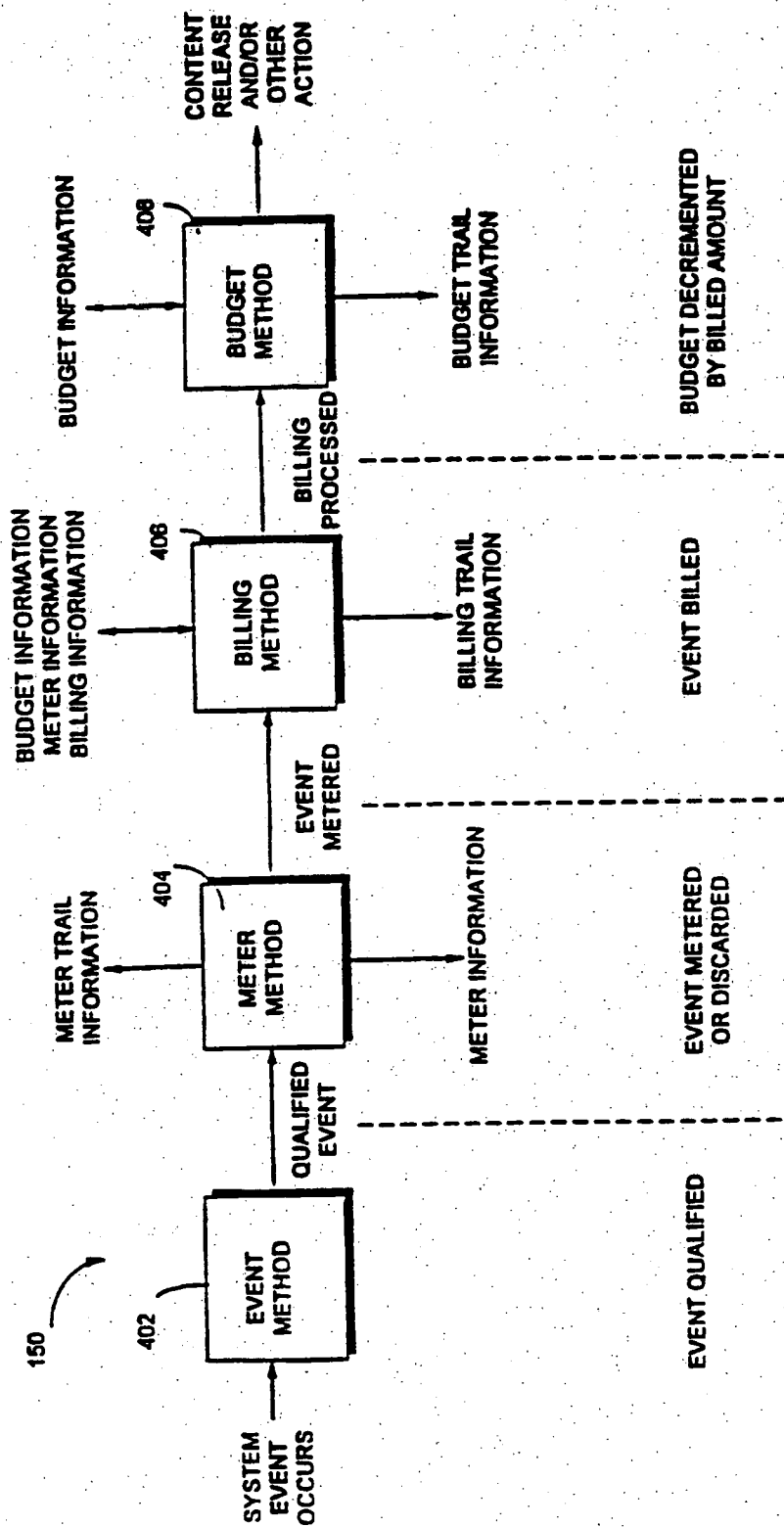


FIG. 46

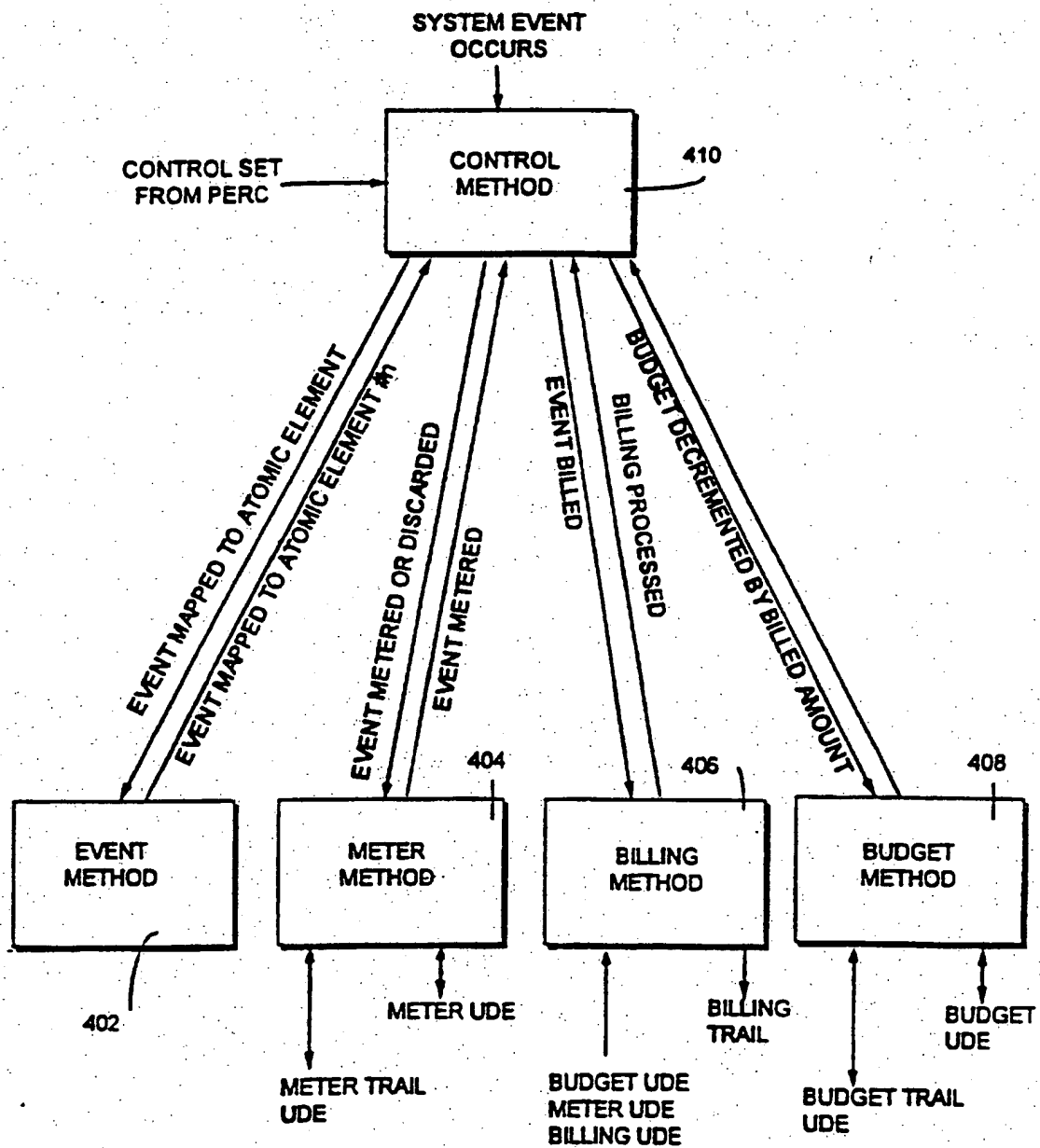
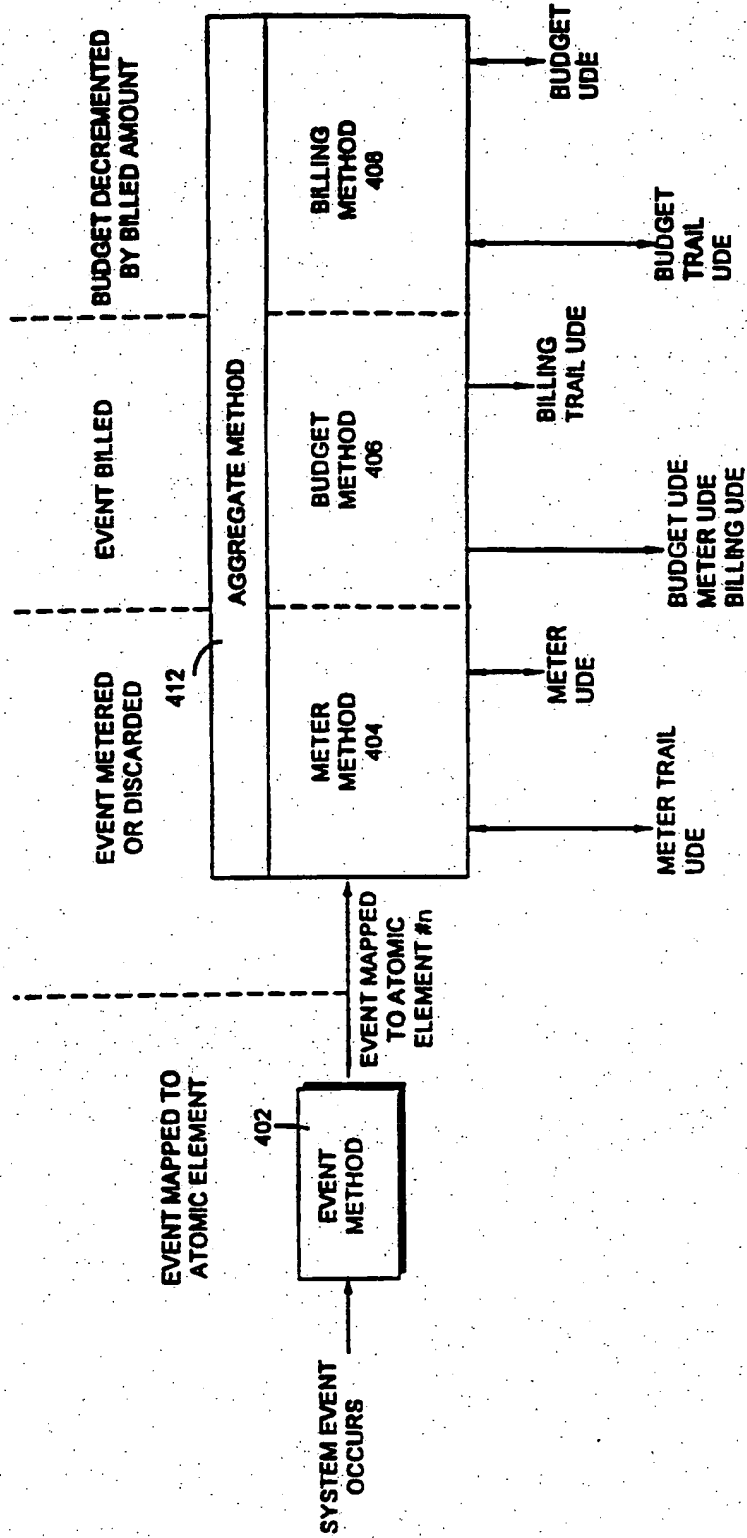
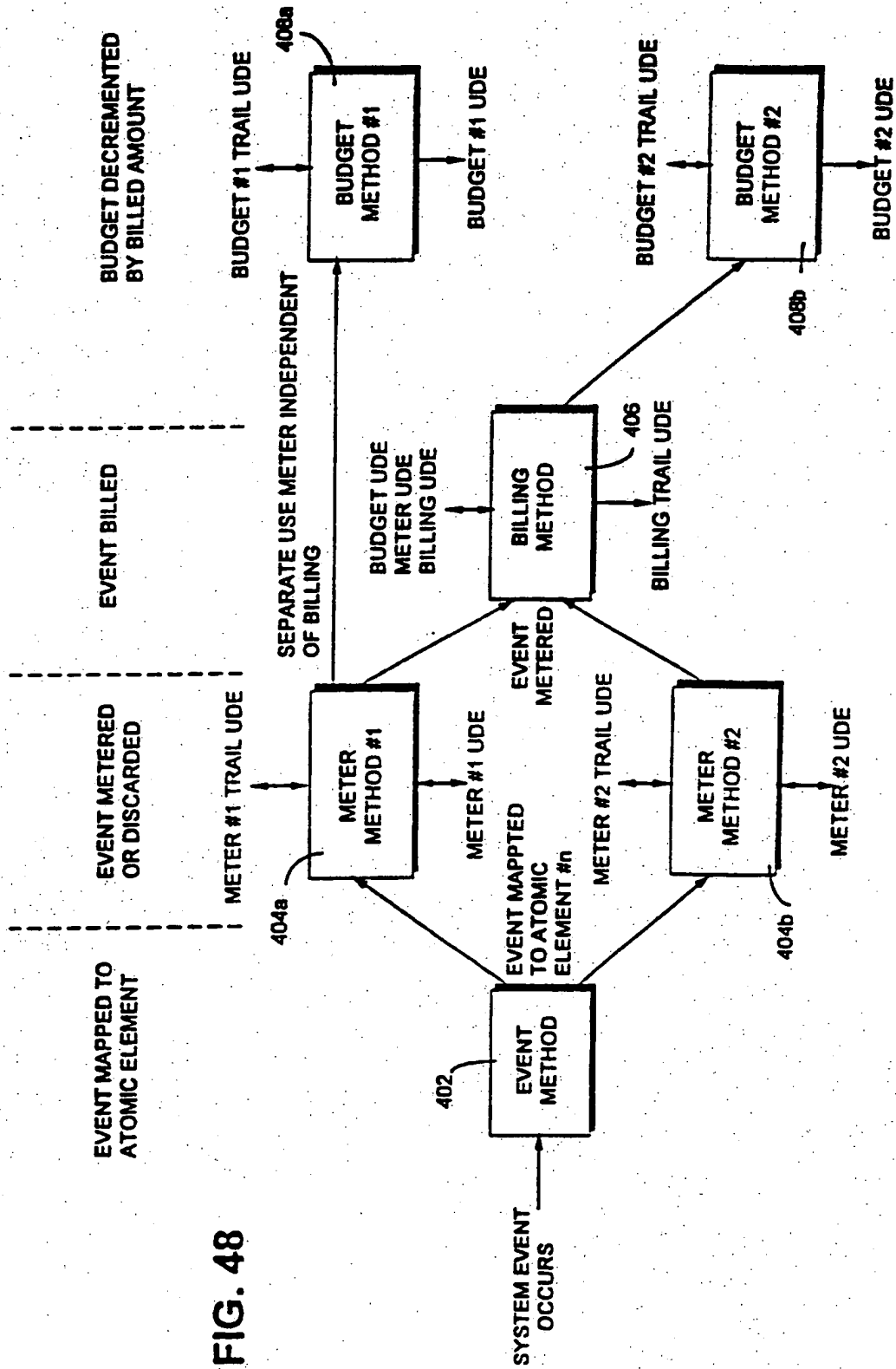


FIG. 47







# OPEN Method Use Process Flow

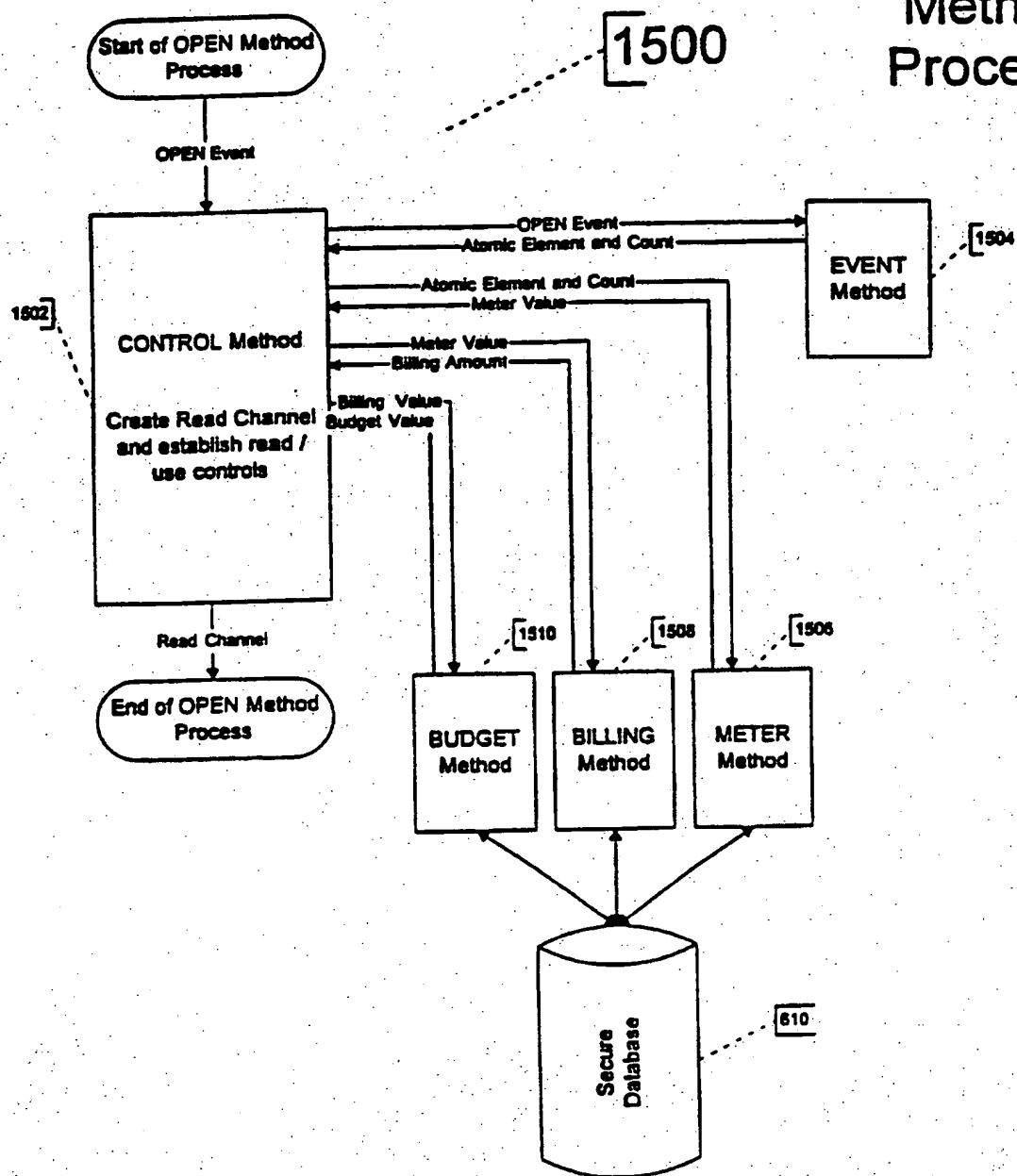


Figure 49

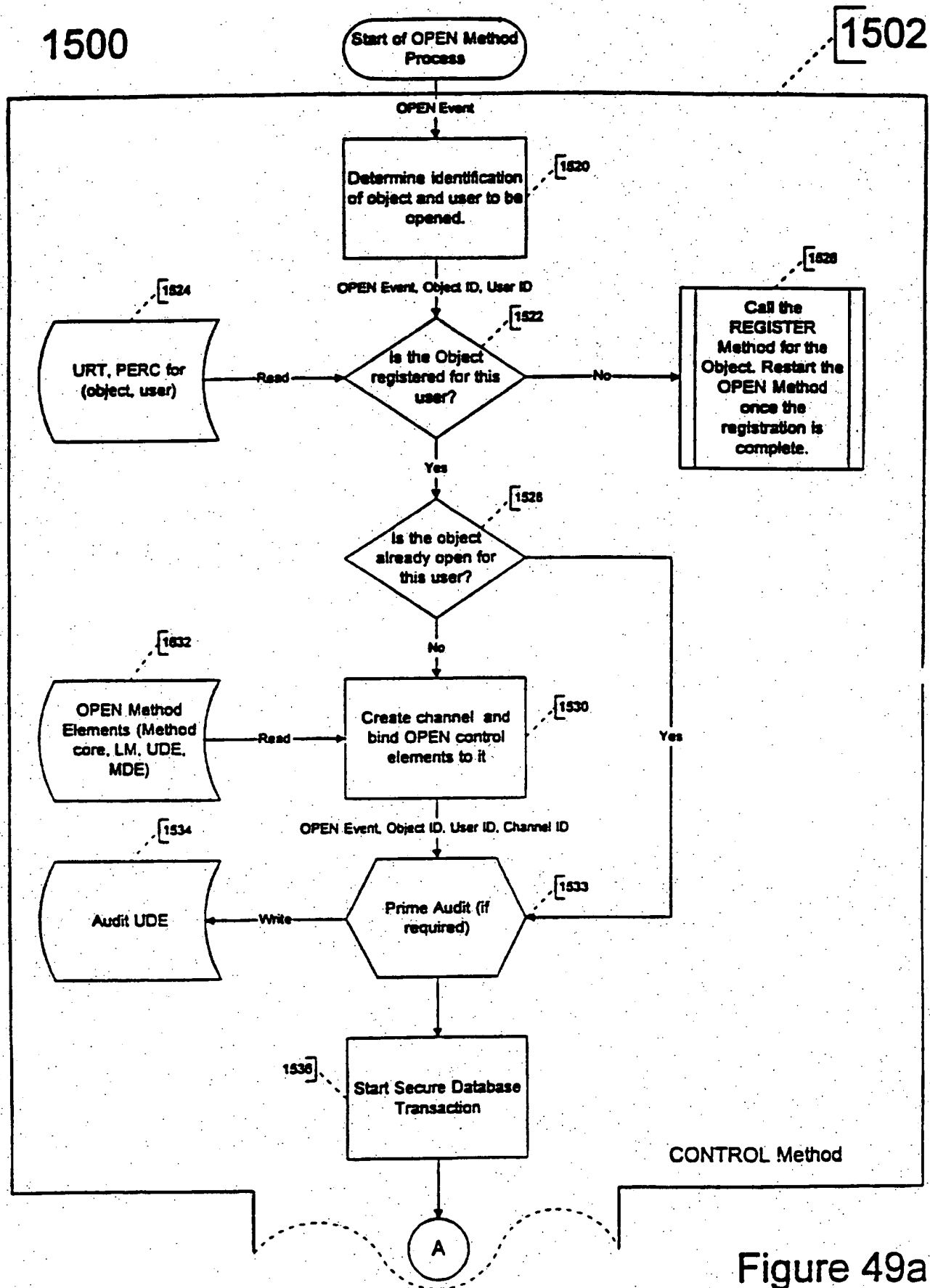
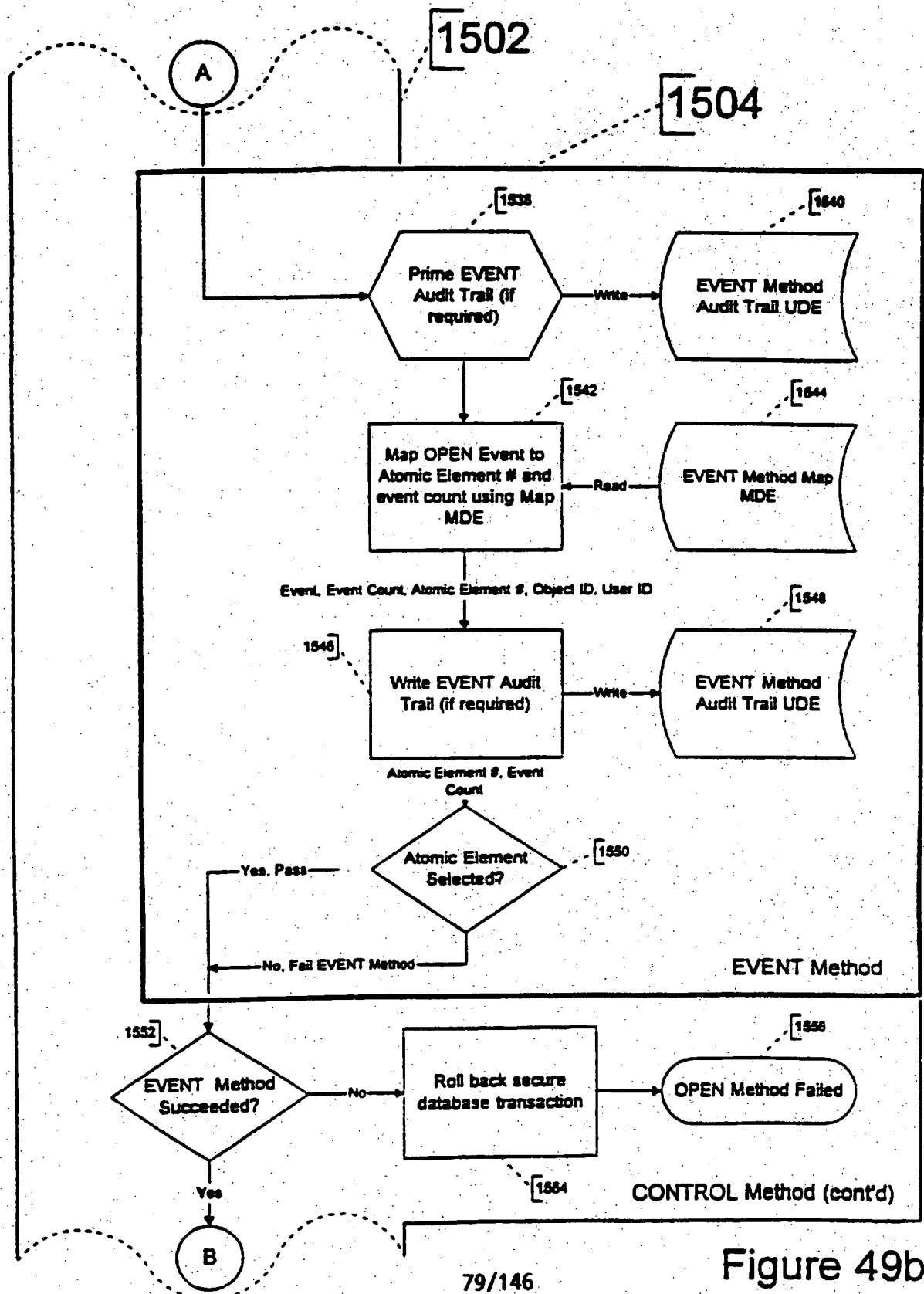
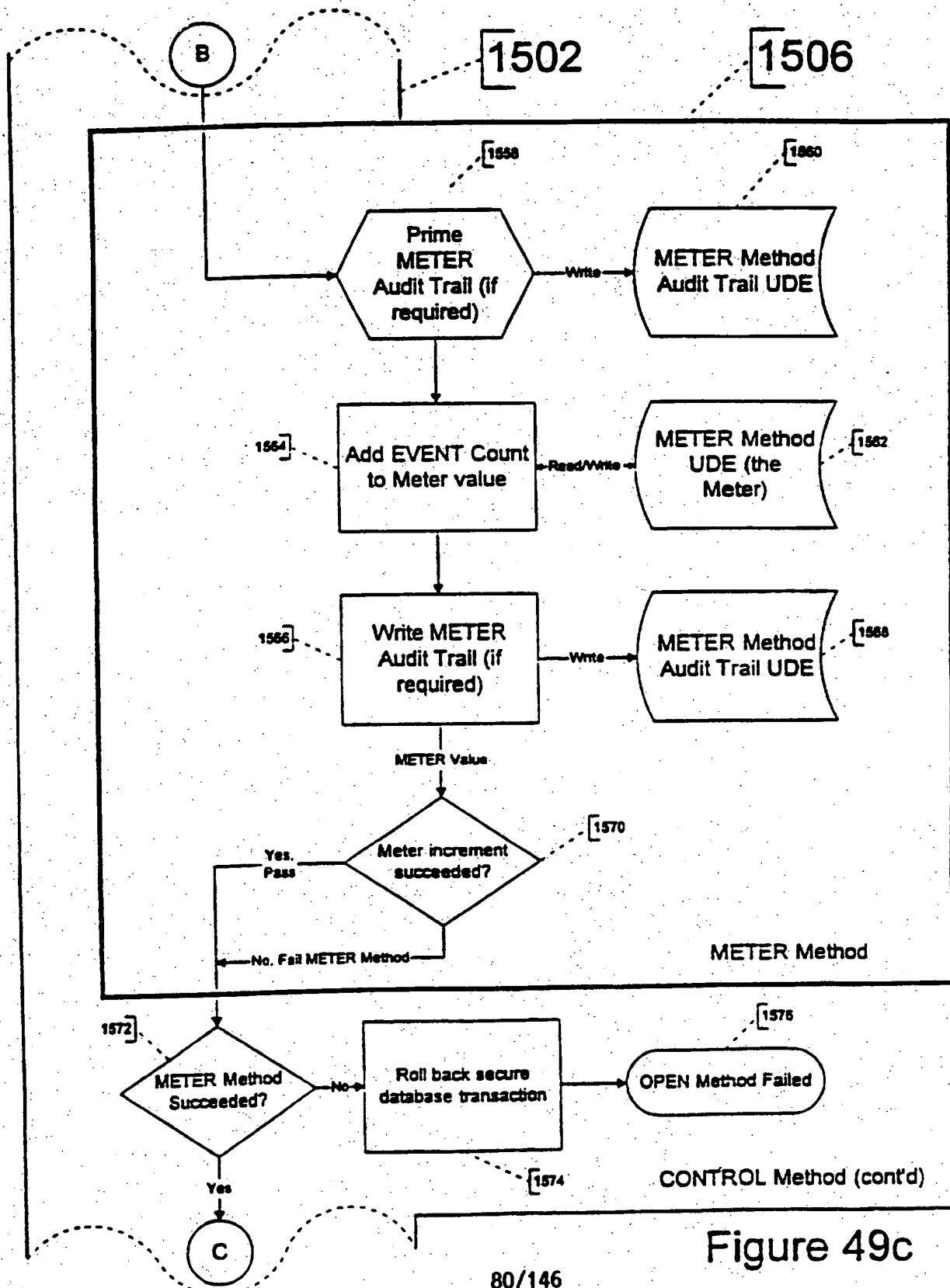
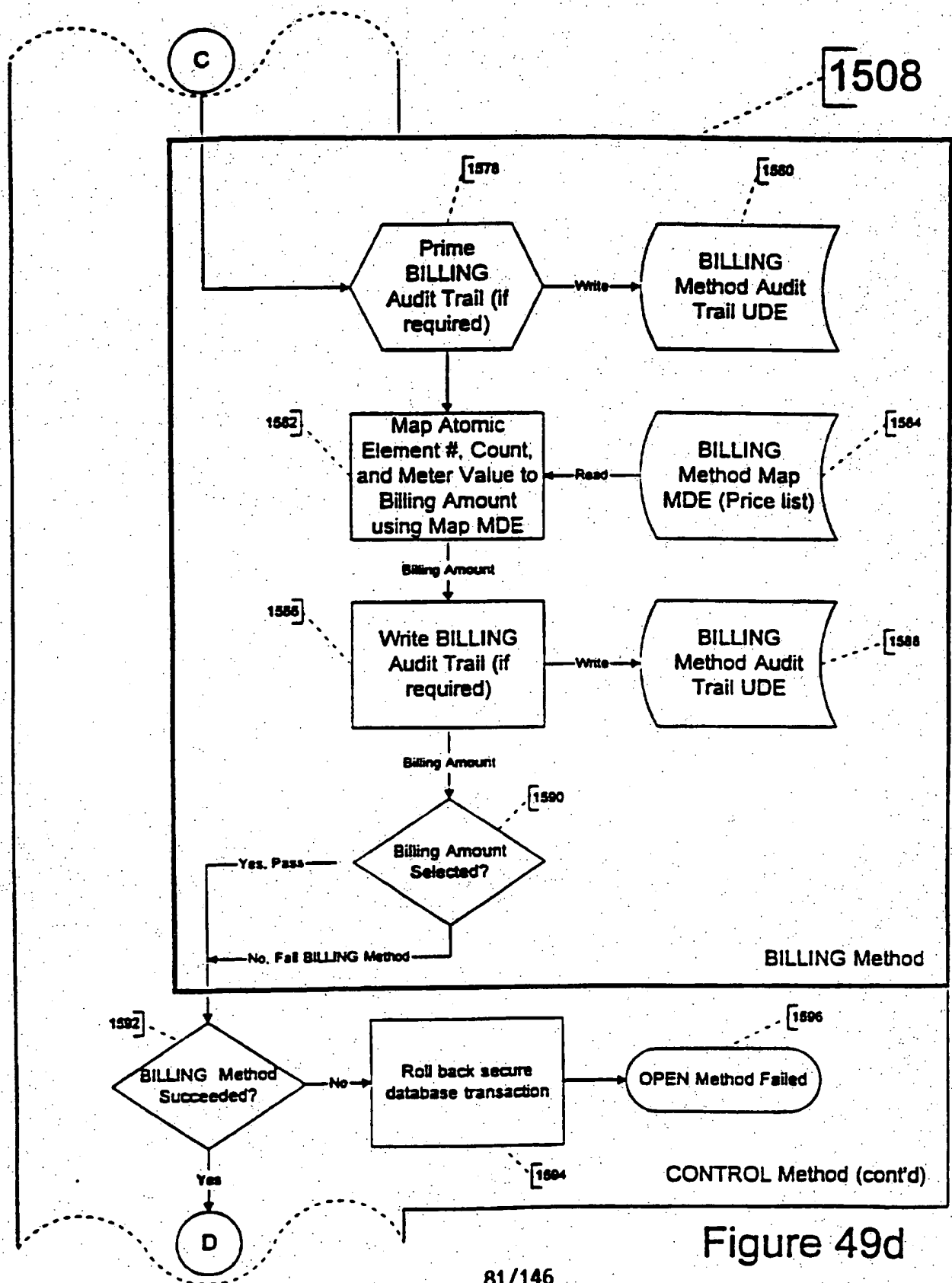


Figure 49a







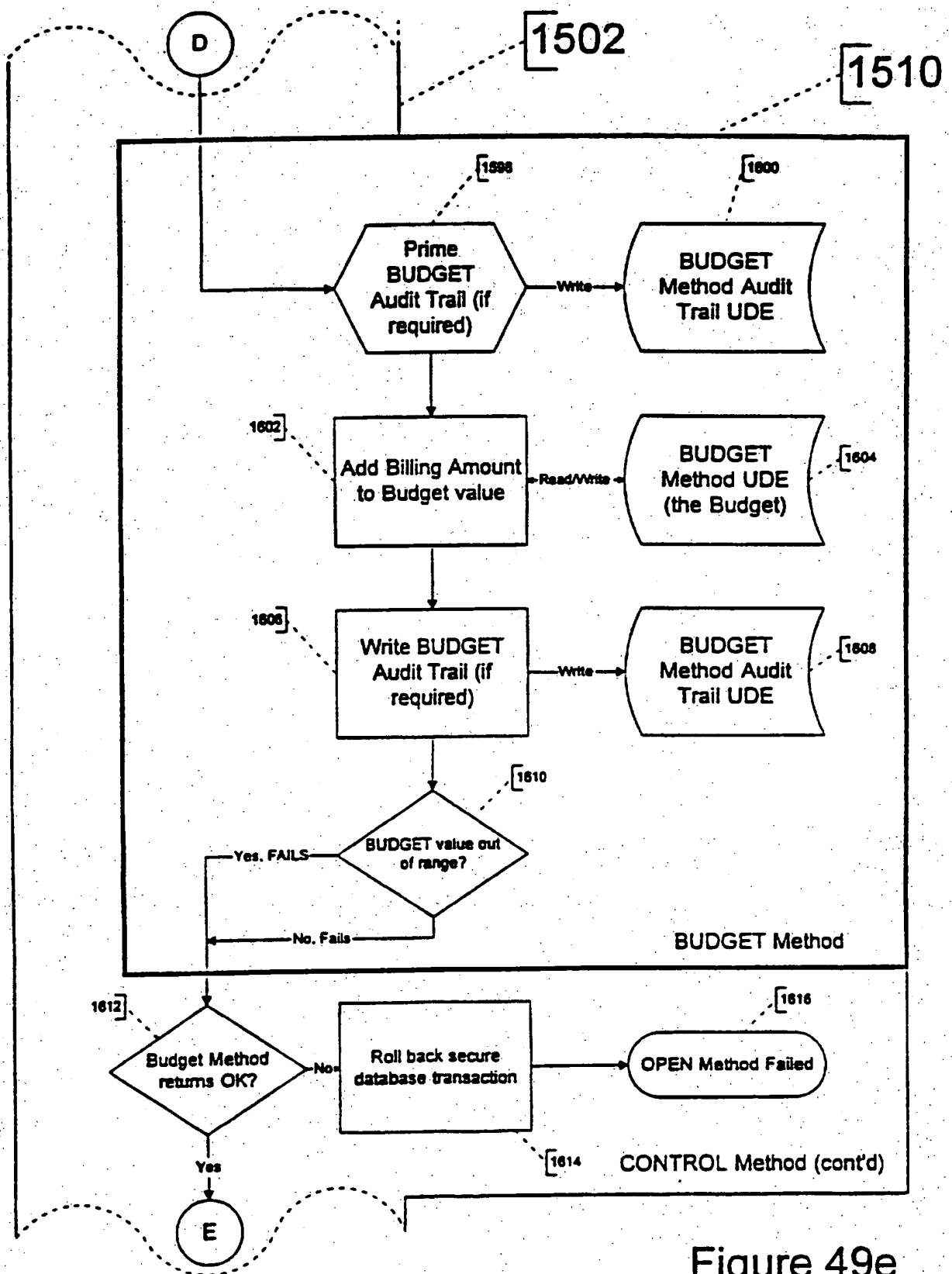


Figure 49e

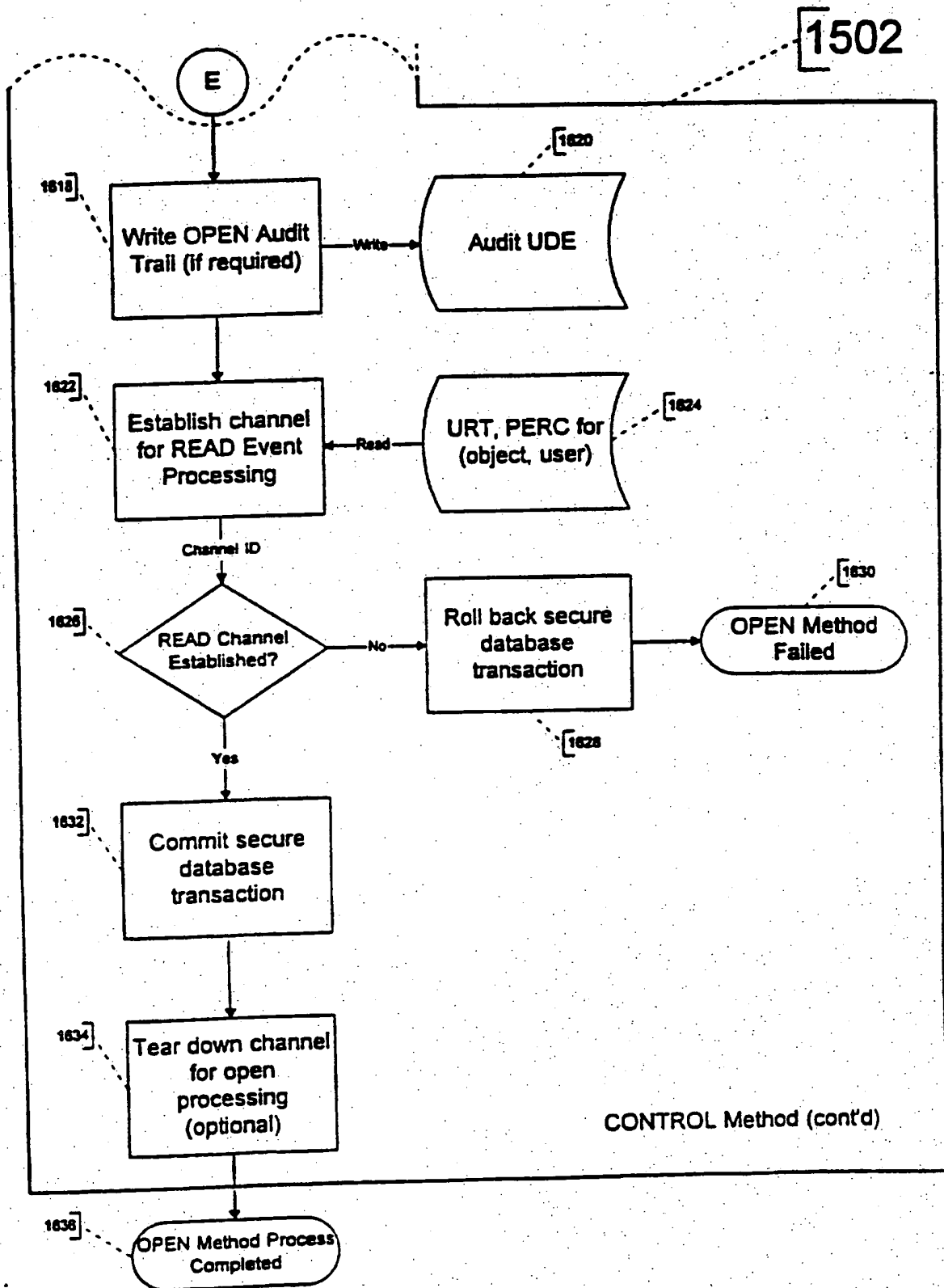


Figure 49f



# READ Method Use Process Flow

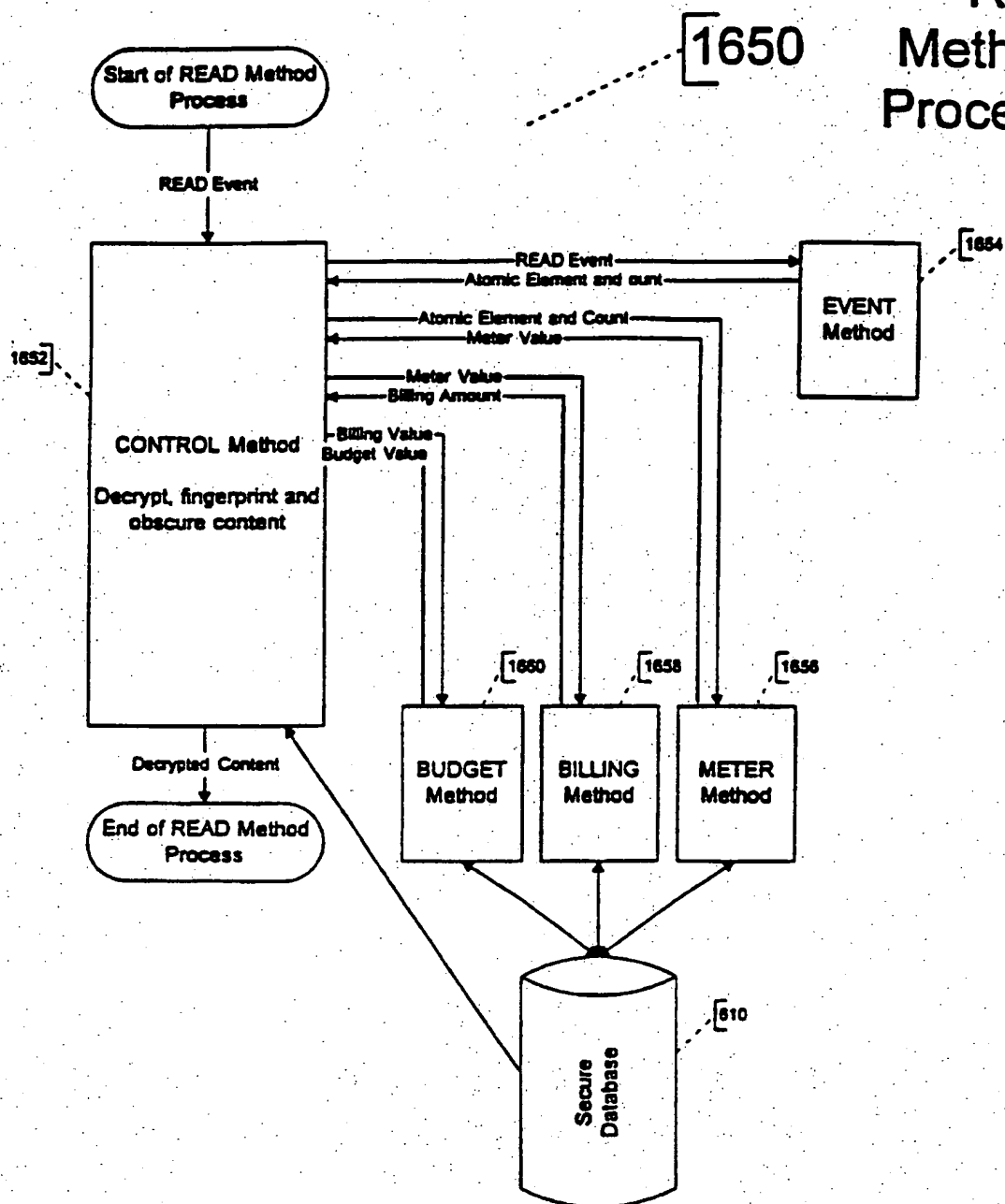


Figure 50

1650

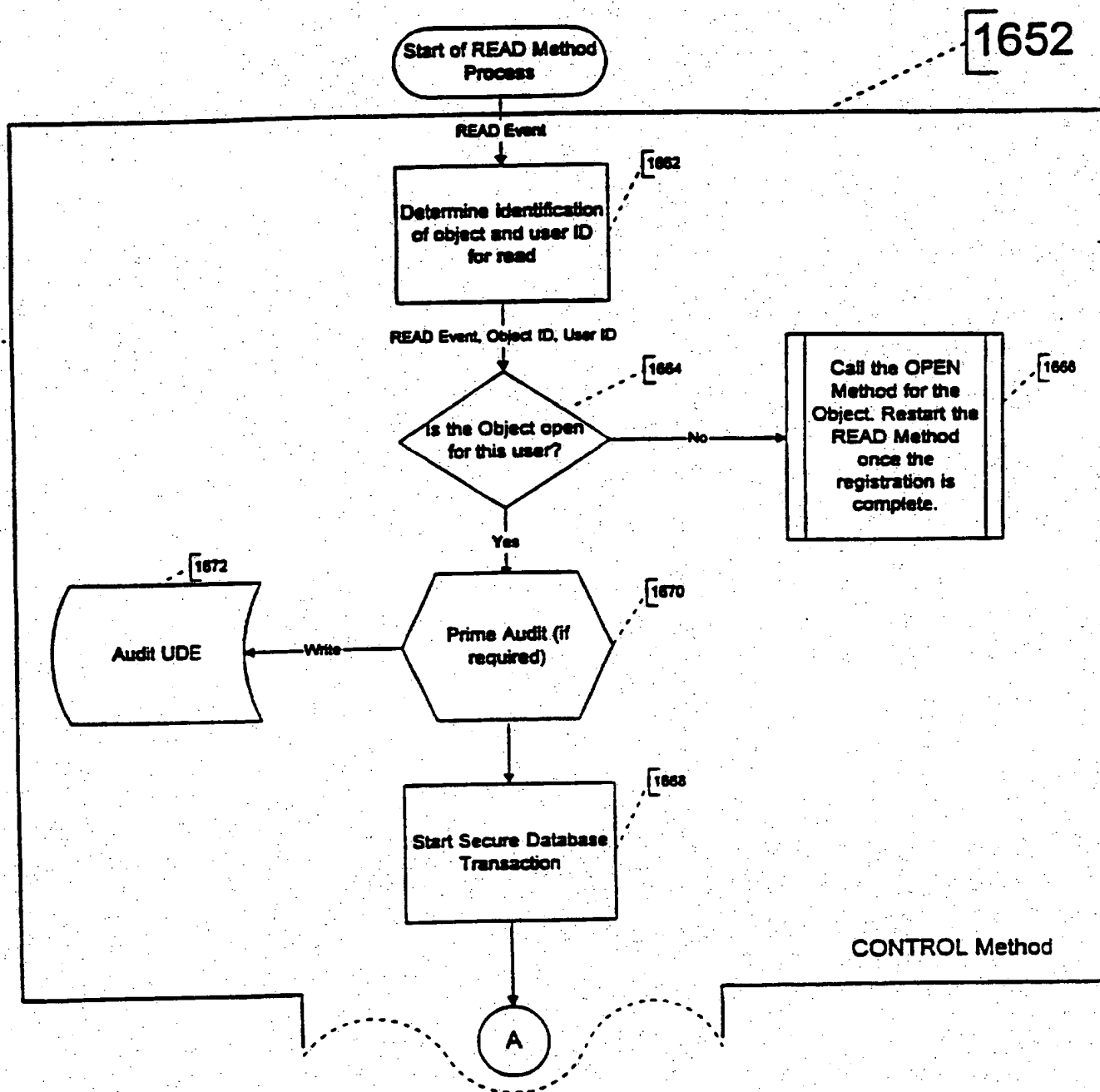


Figure 50a

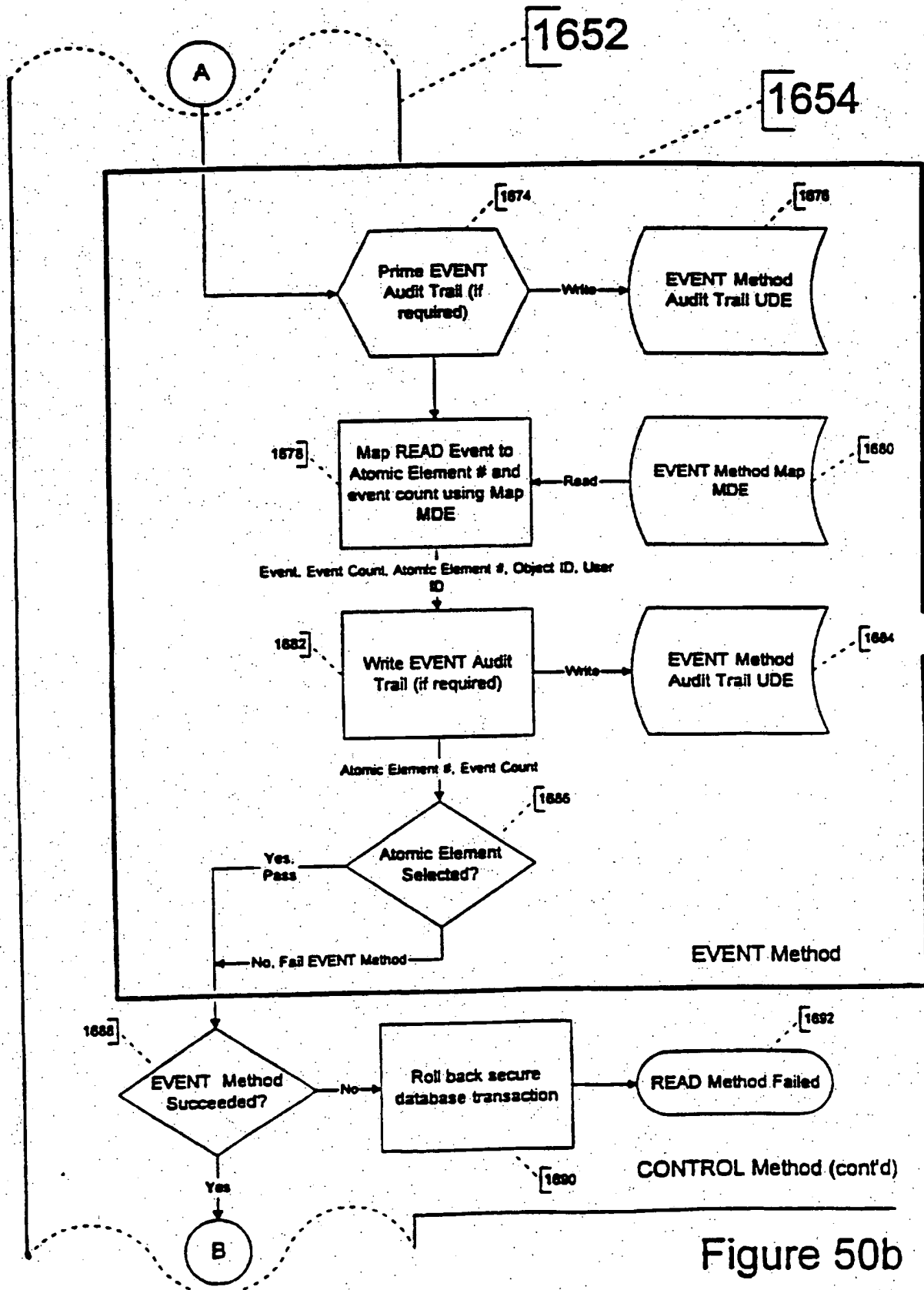
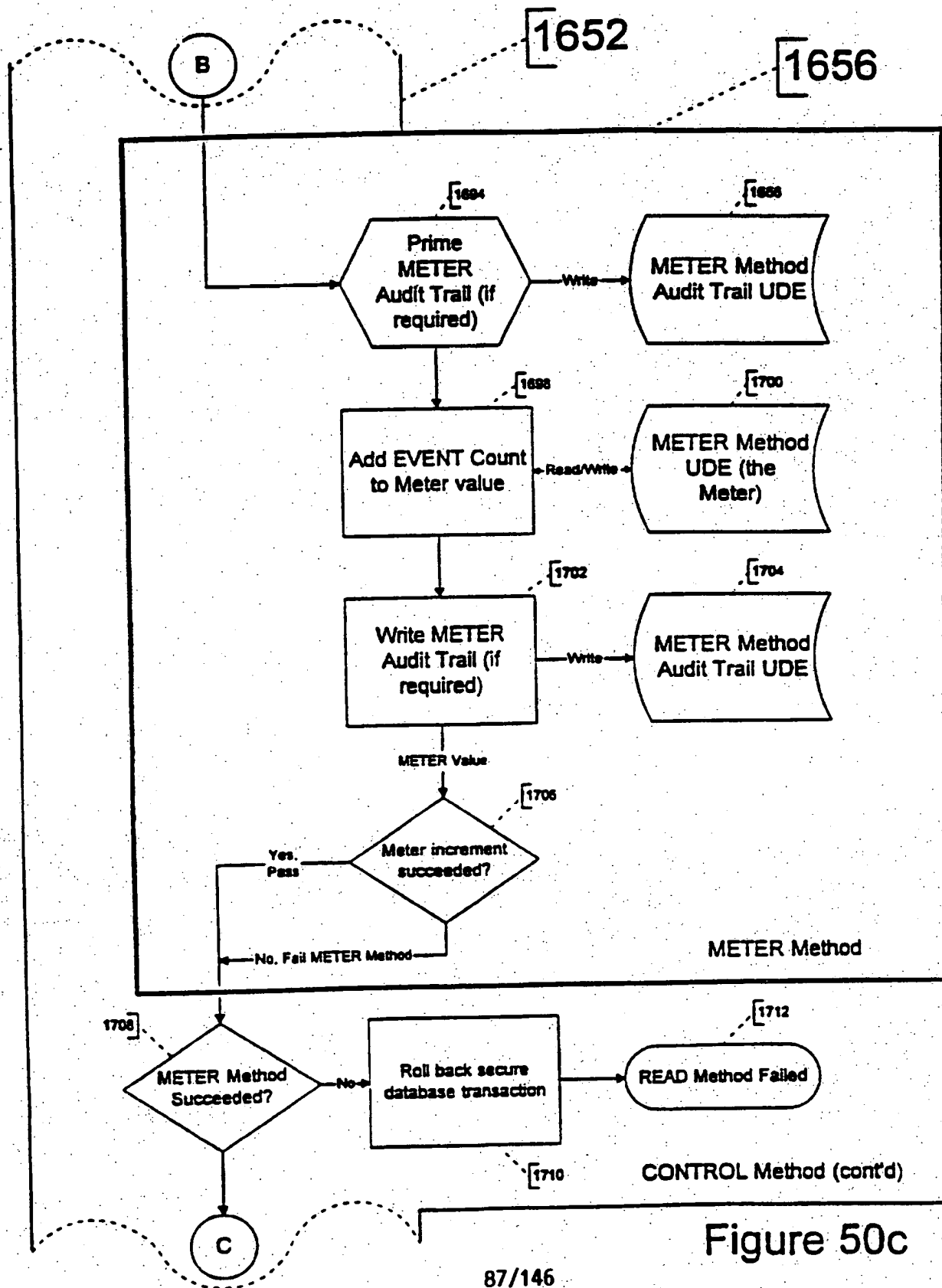


Figure 50b



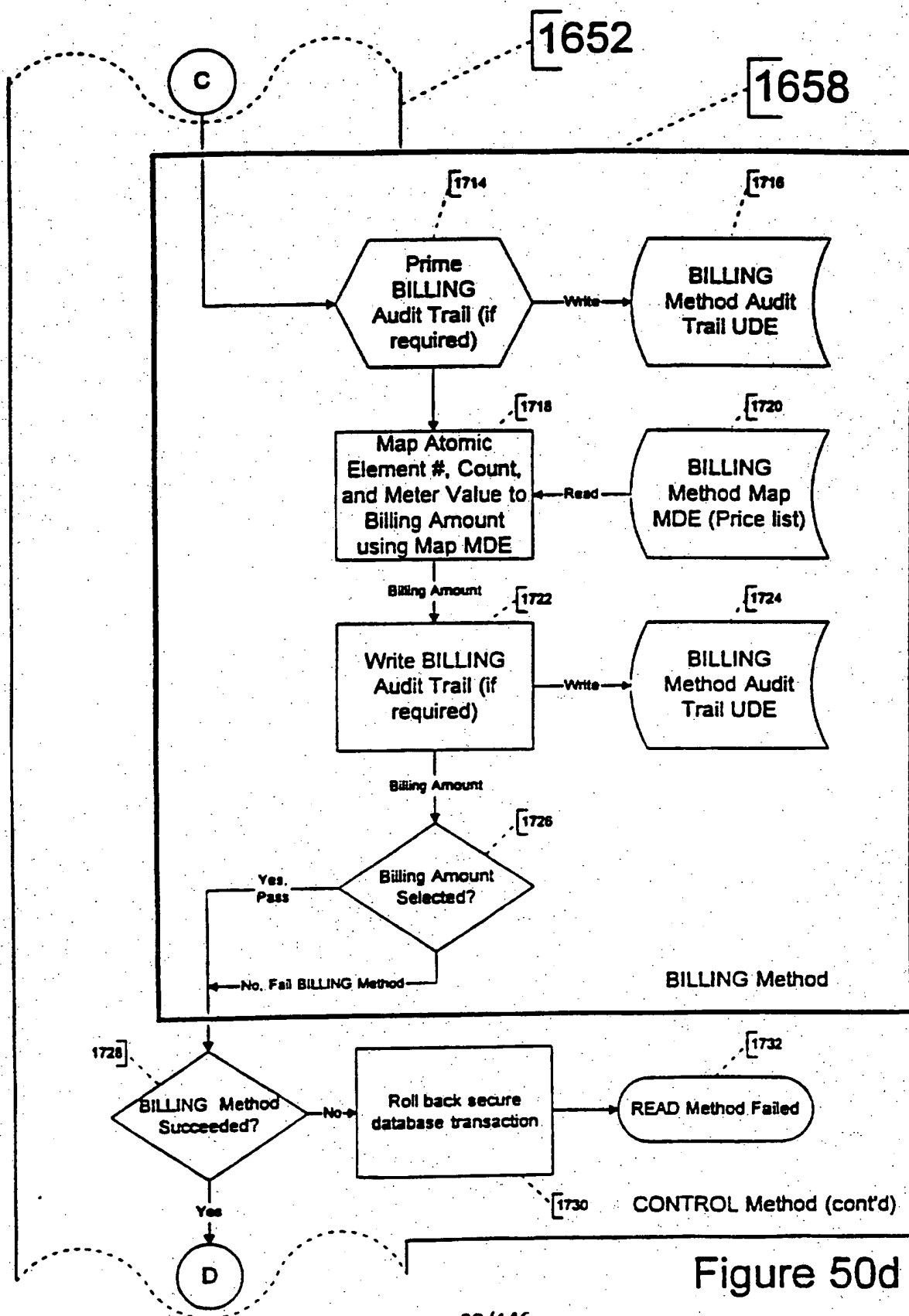


Figure 50d

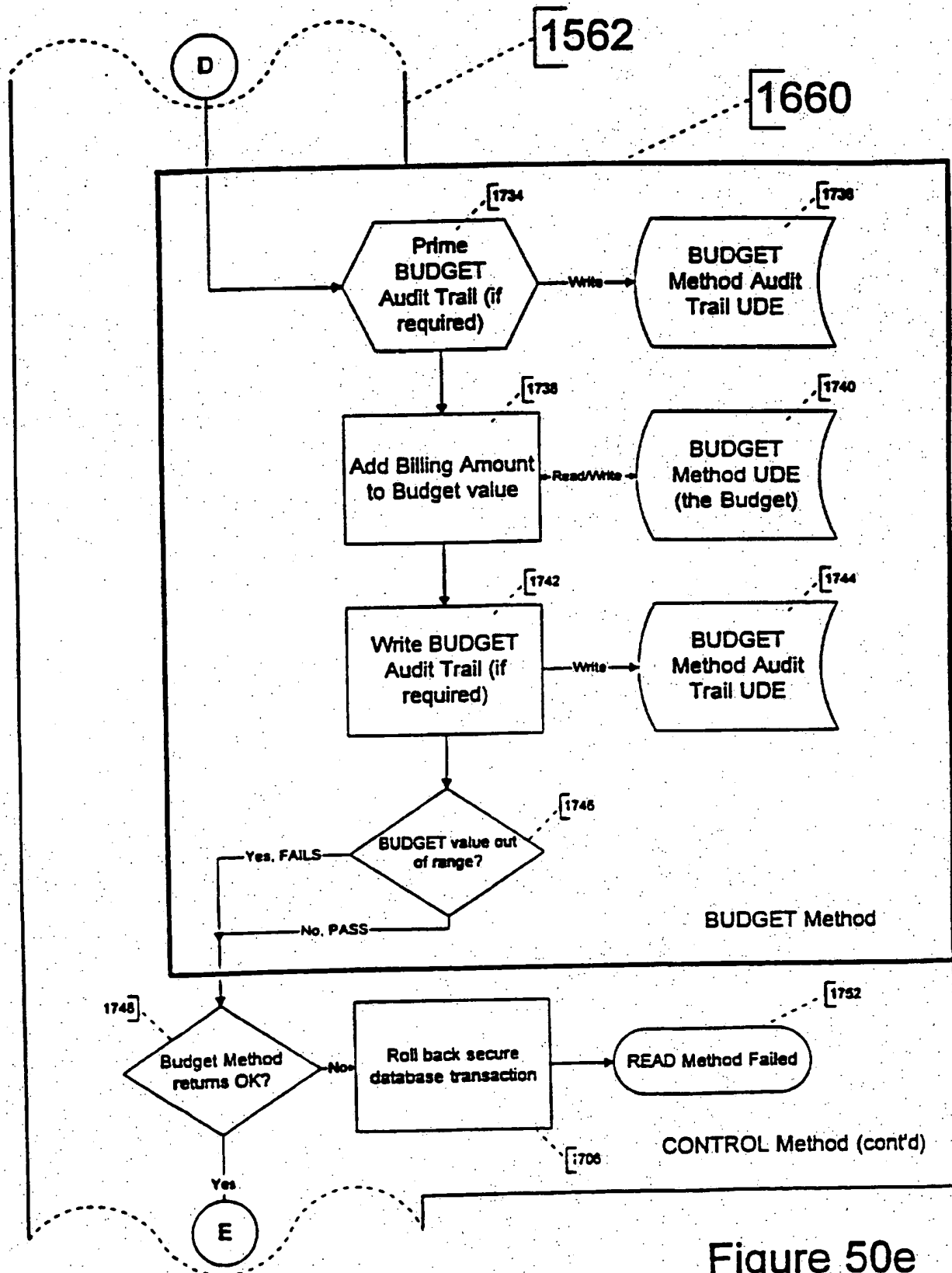
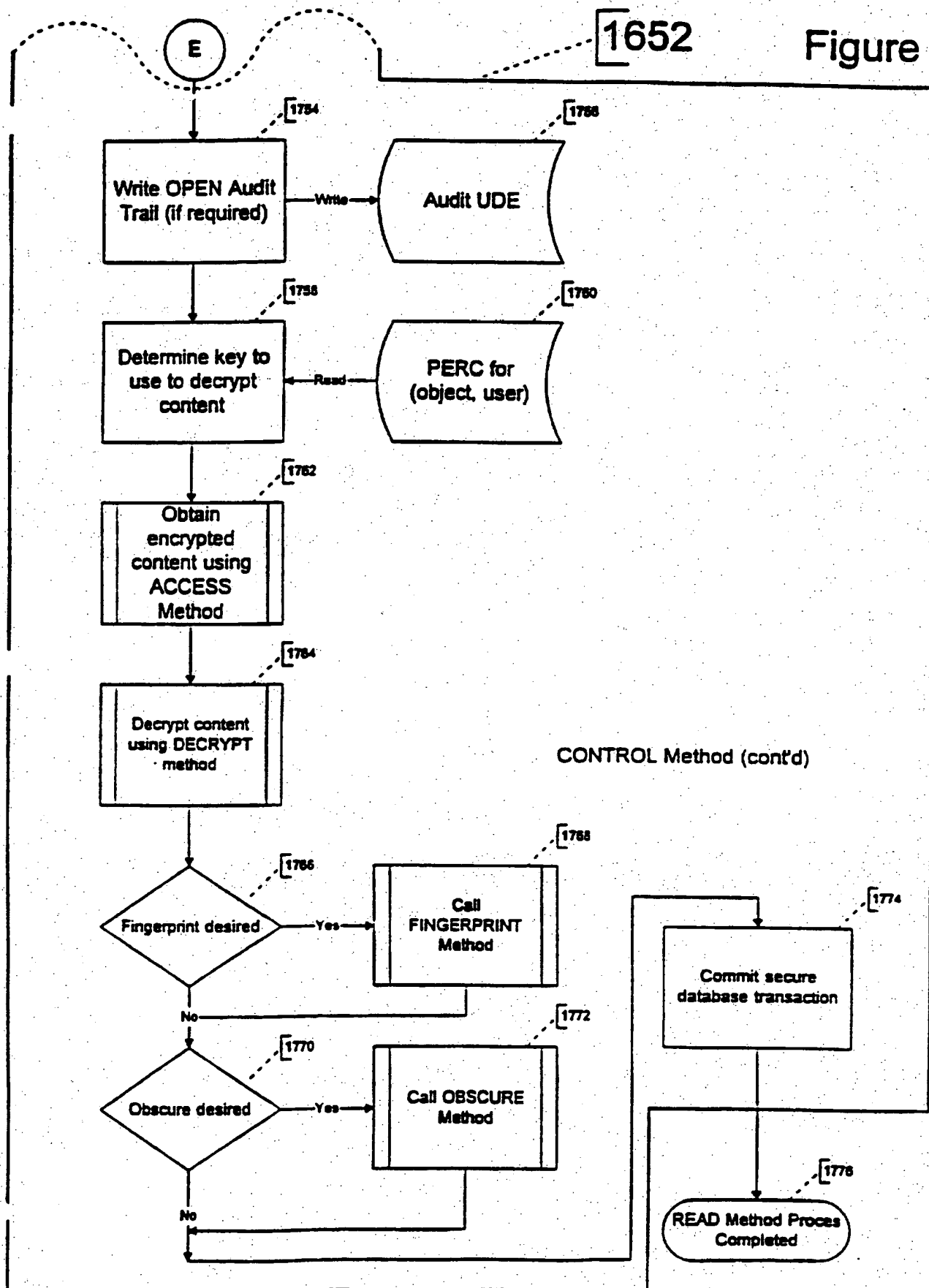


Figure 50e

Figure 50f



# WRITE Method Use Process Flow

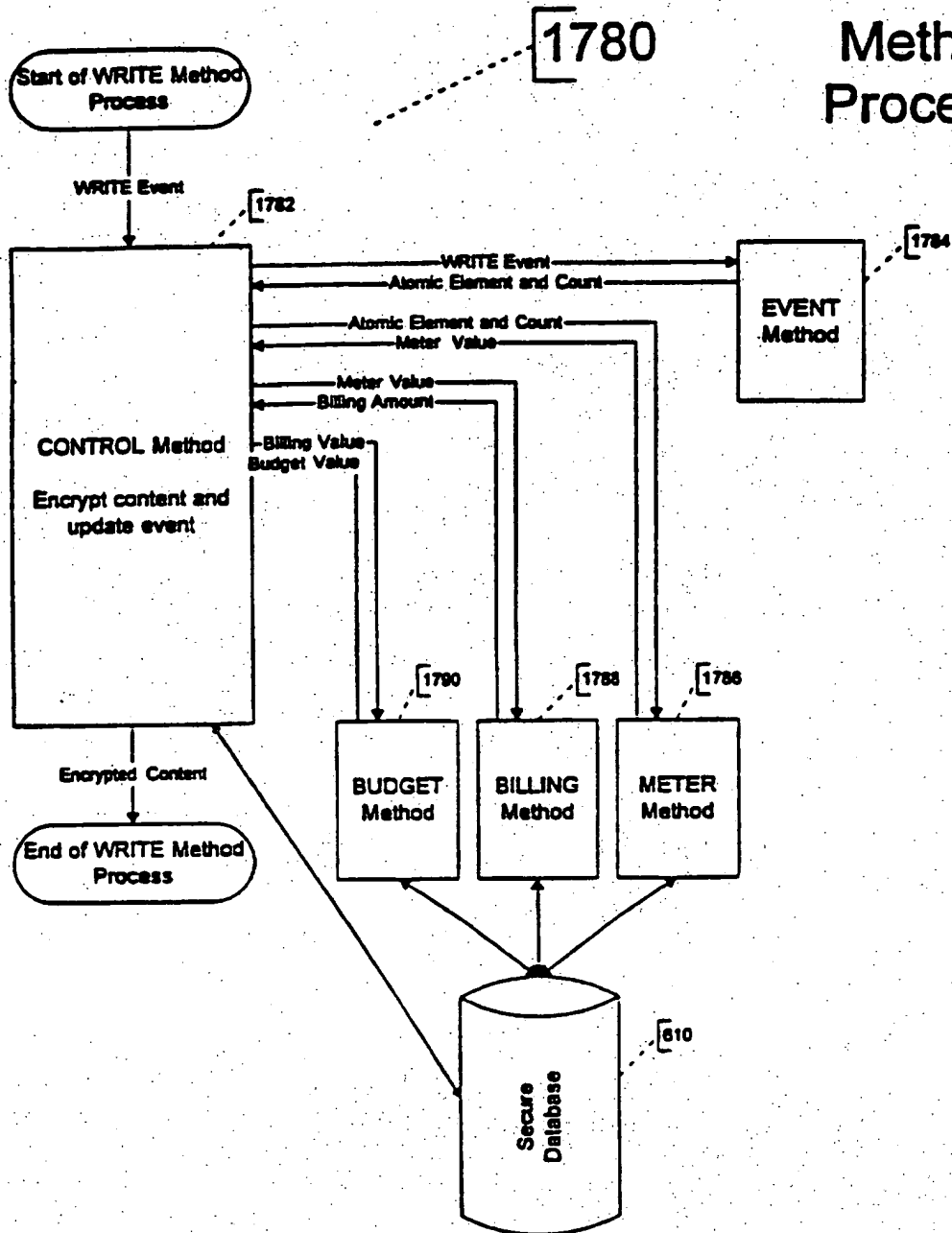


Figure 51



1780

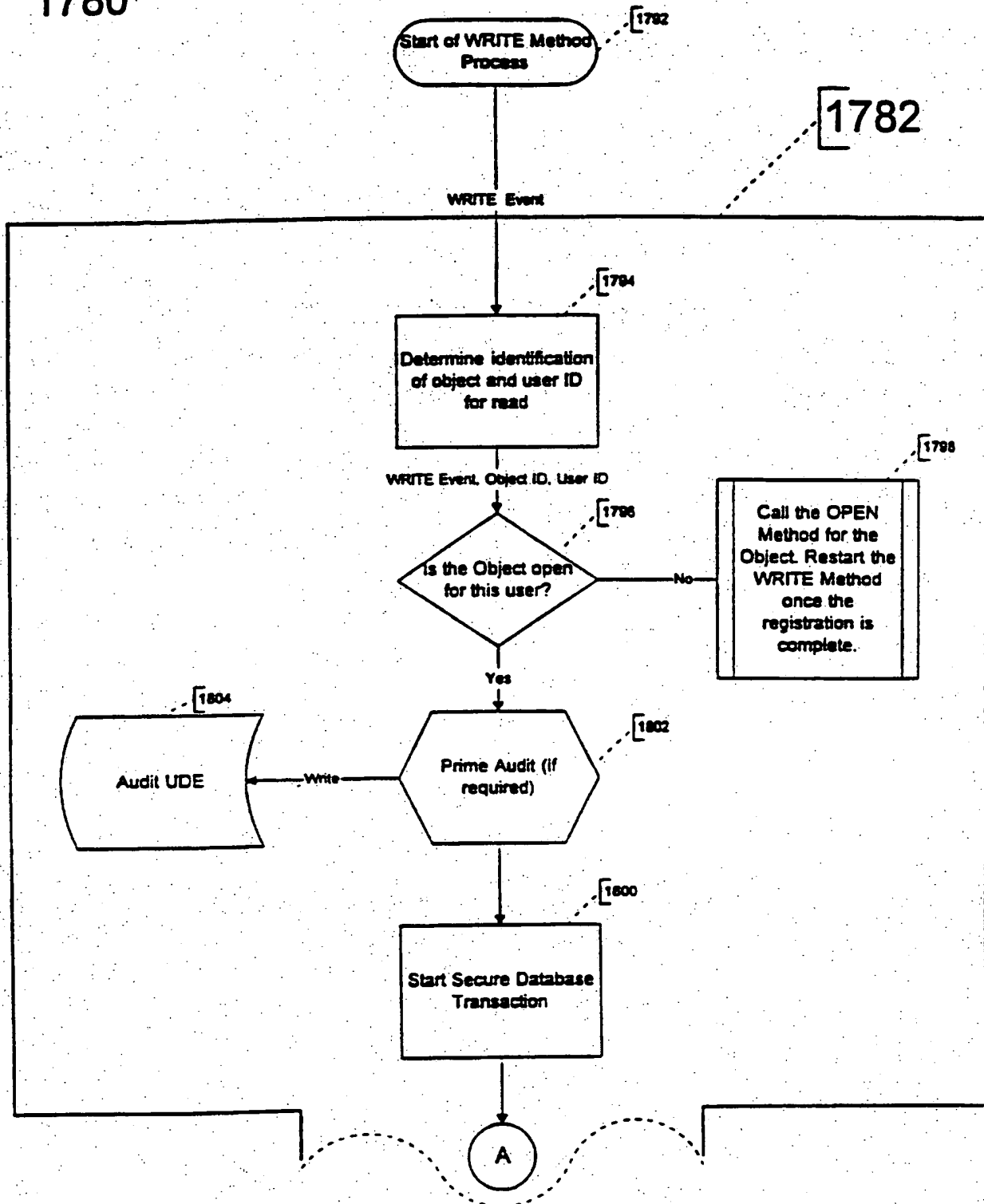


Figure 51a

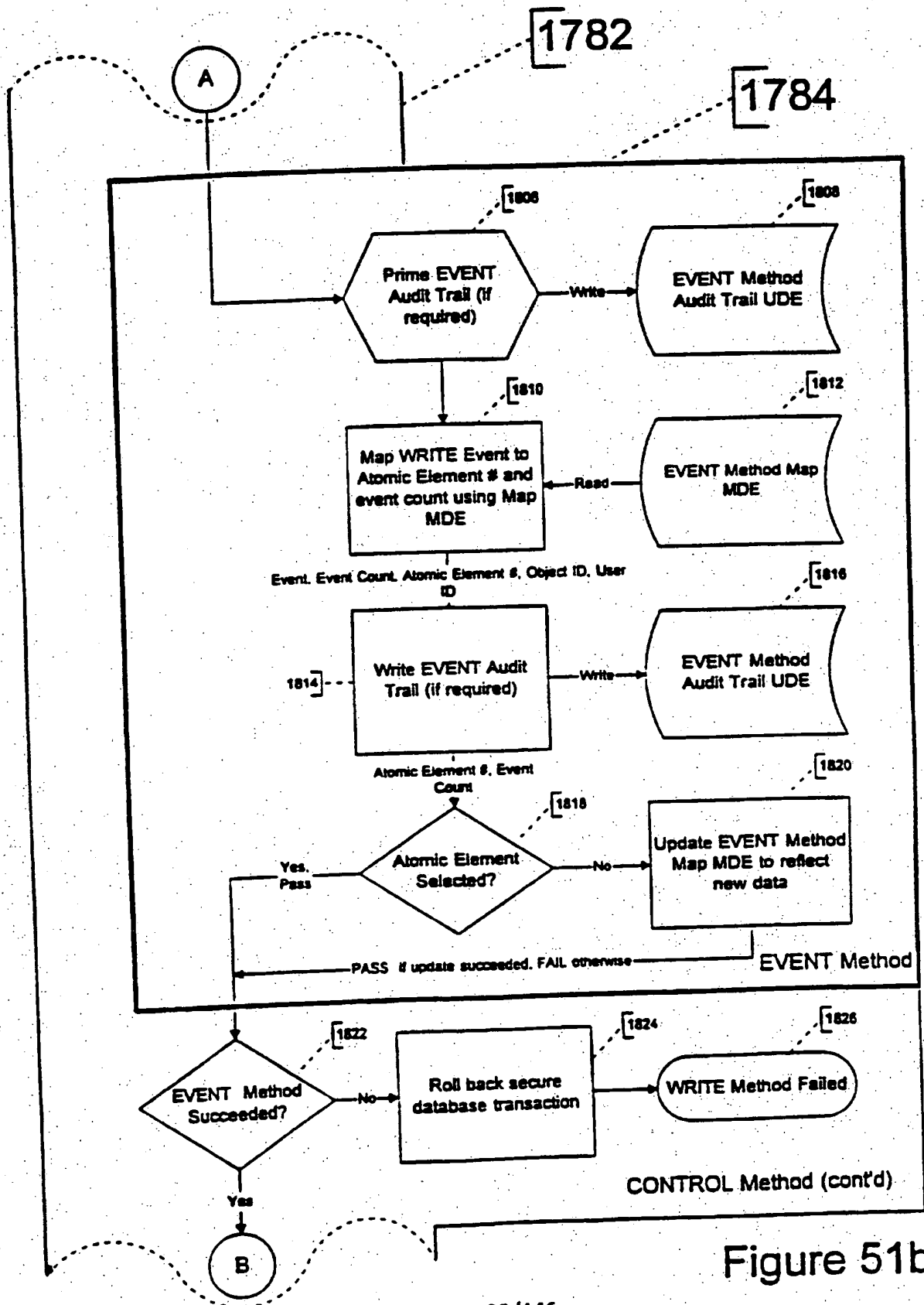
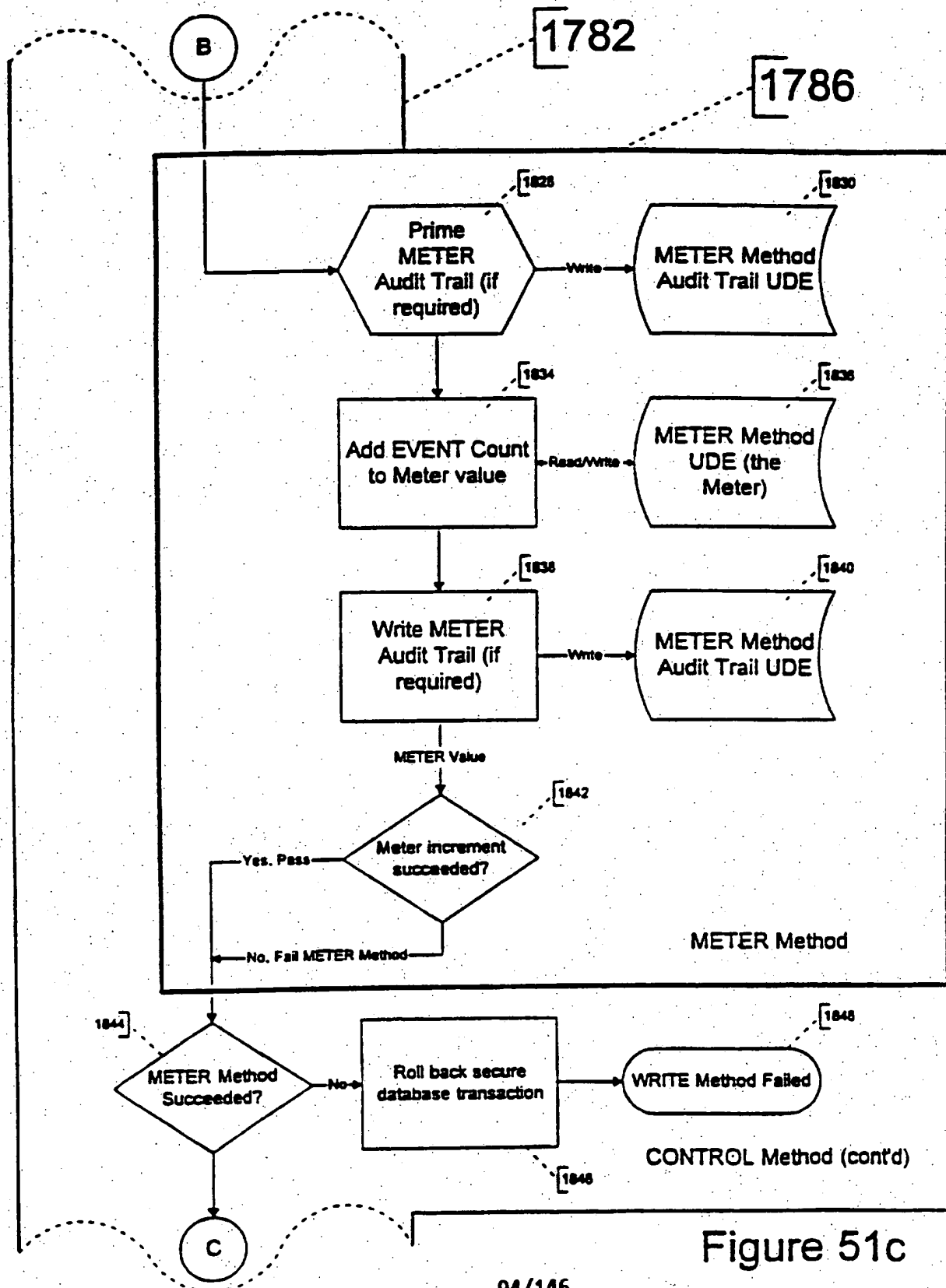


Figure 51b



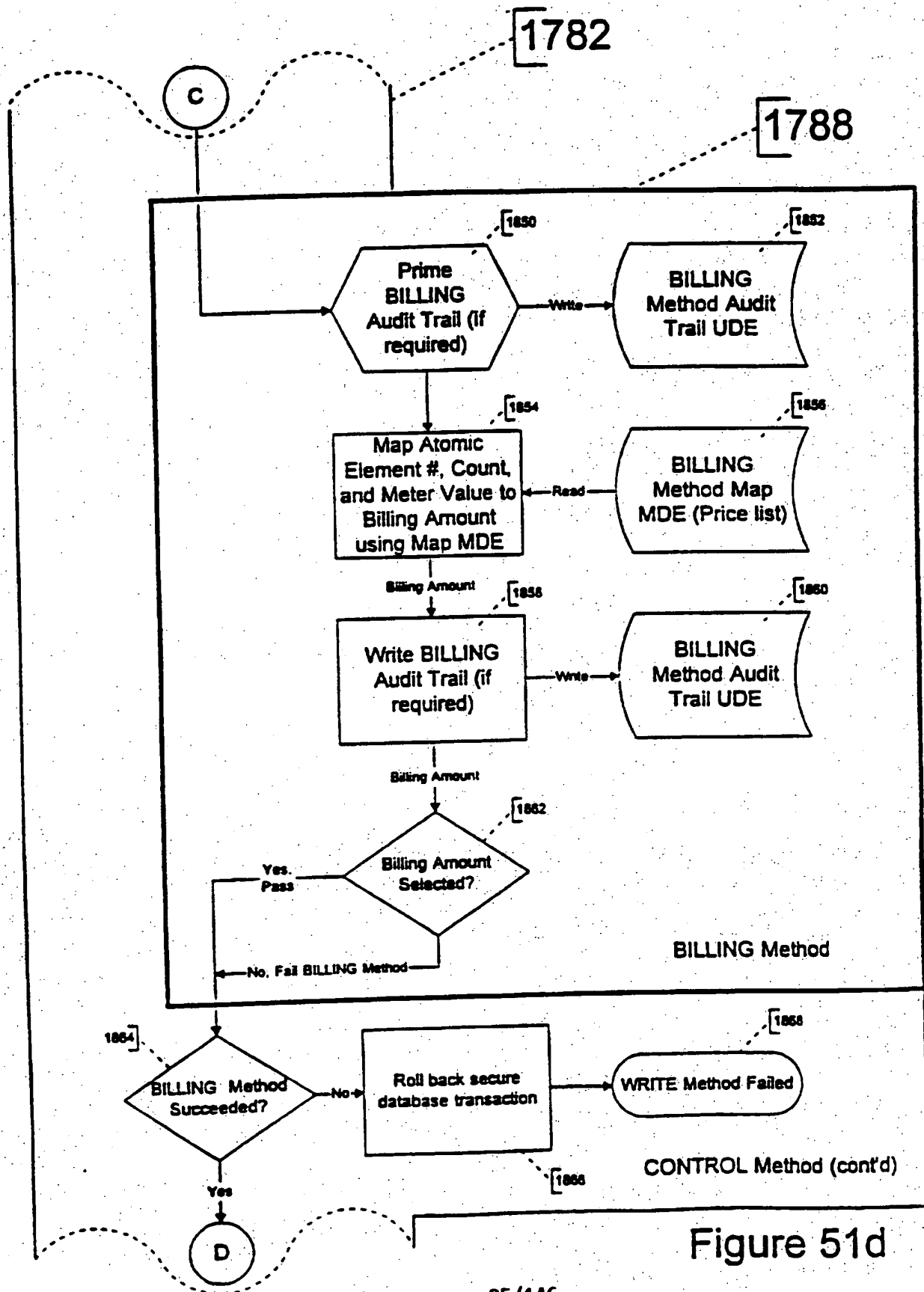


Figure 51d

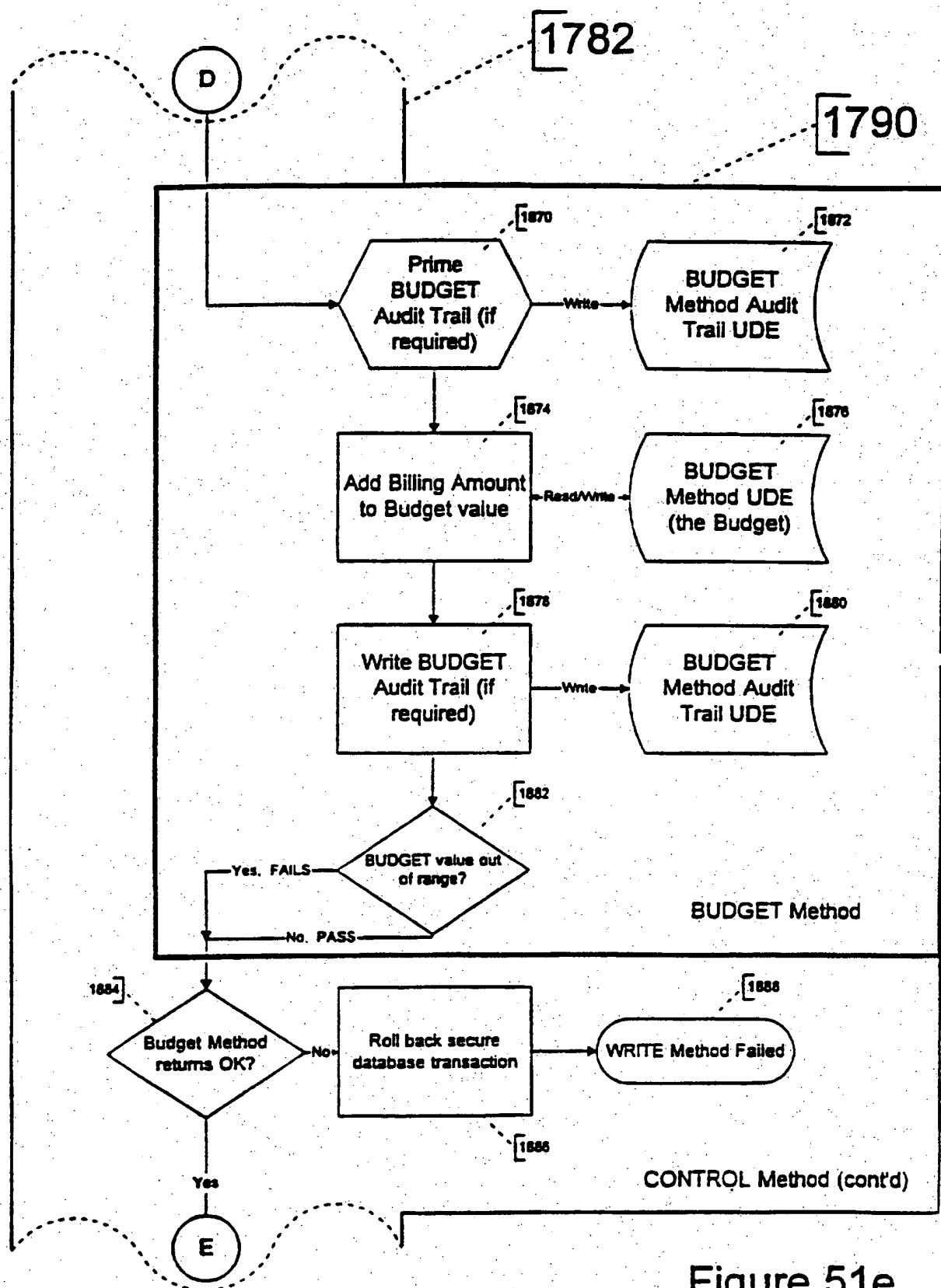
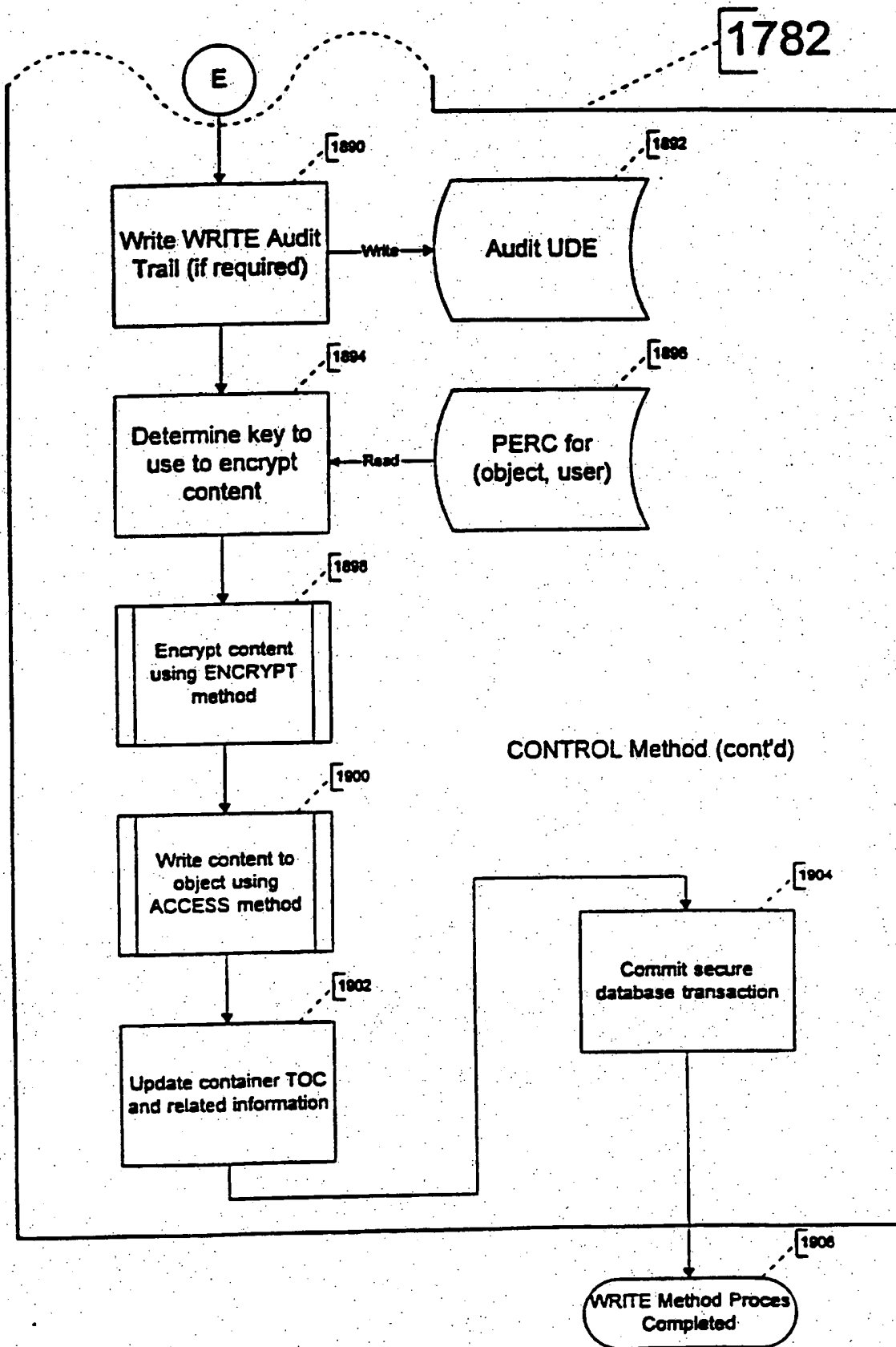


Figure 51e



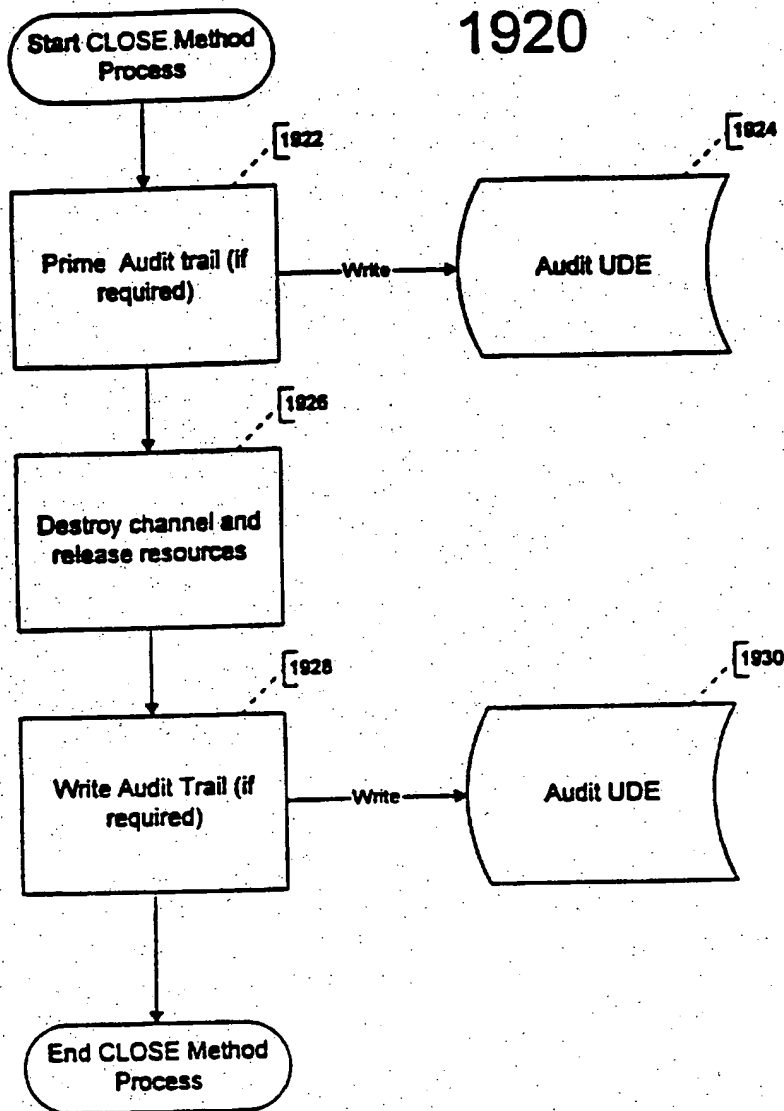


Figure 52

# EVENT Method Process Flows

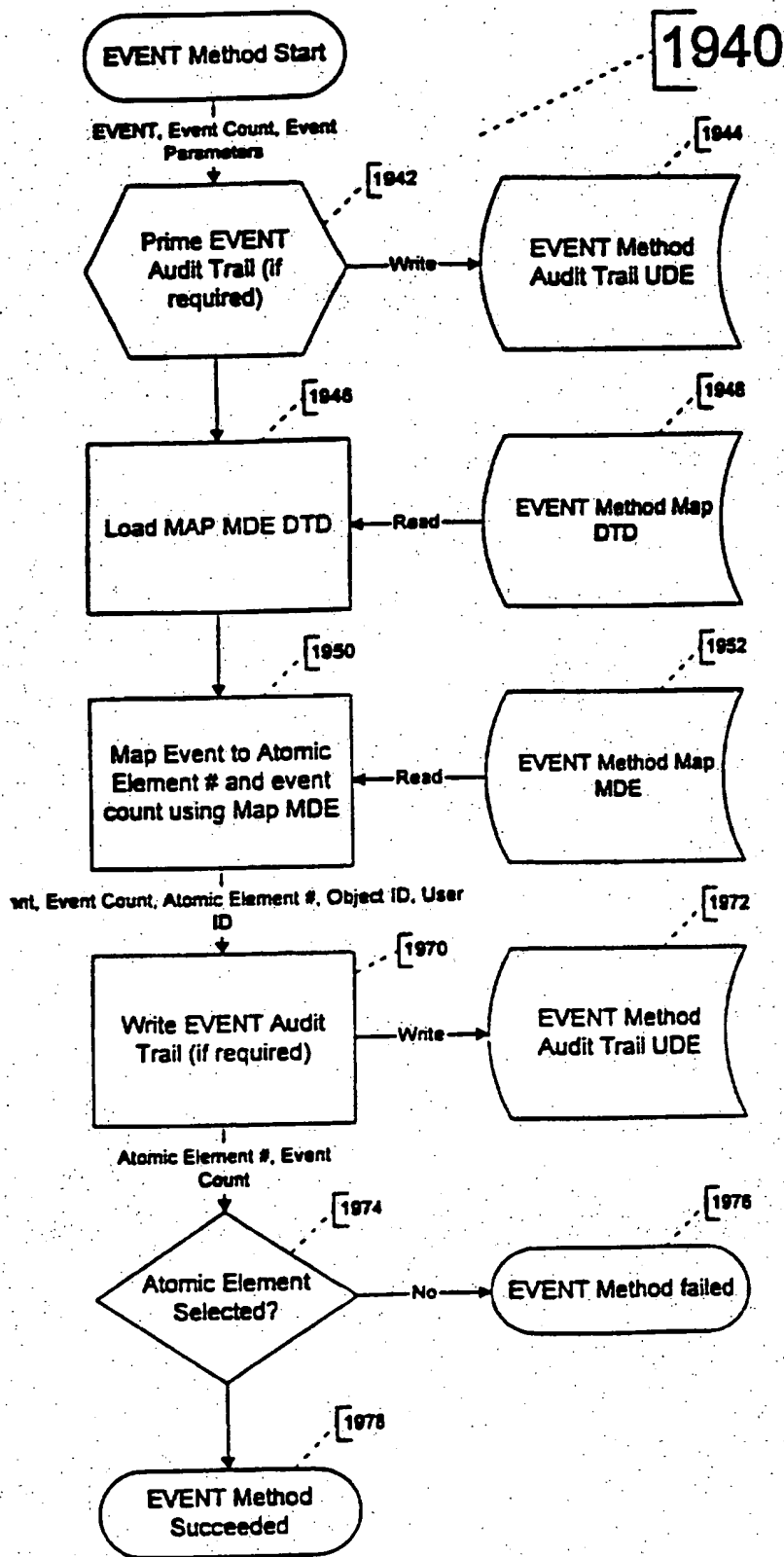


Figure 53a



# Sample EVENT Method Mapping Process

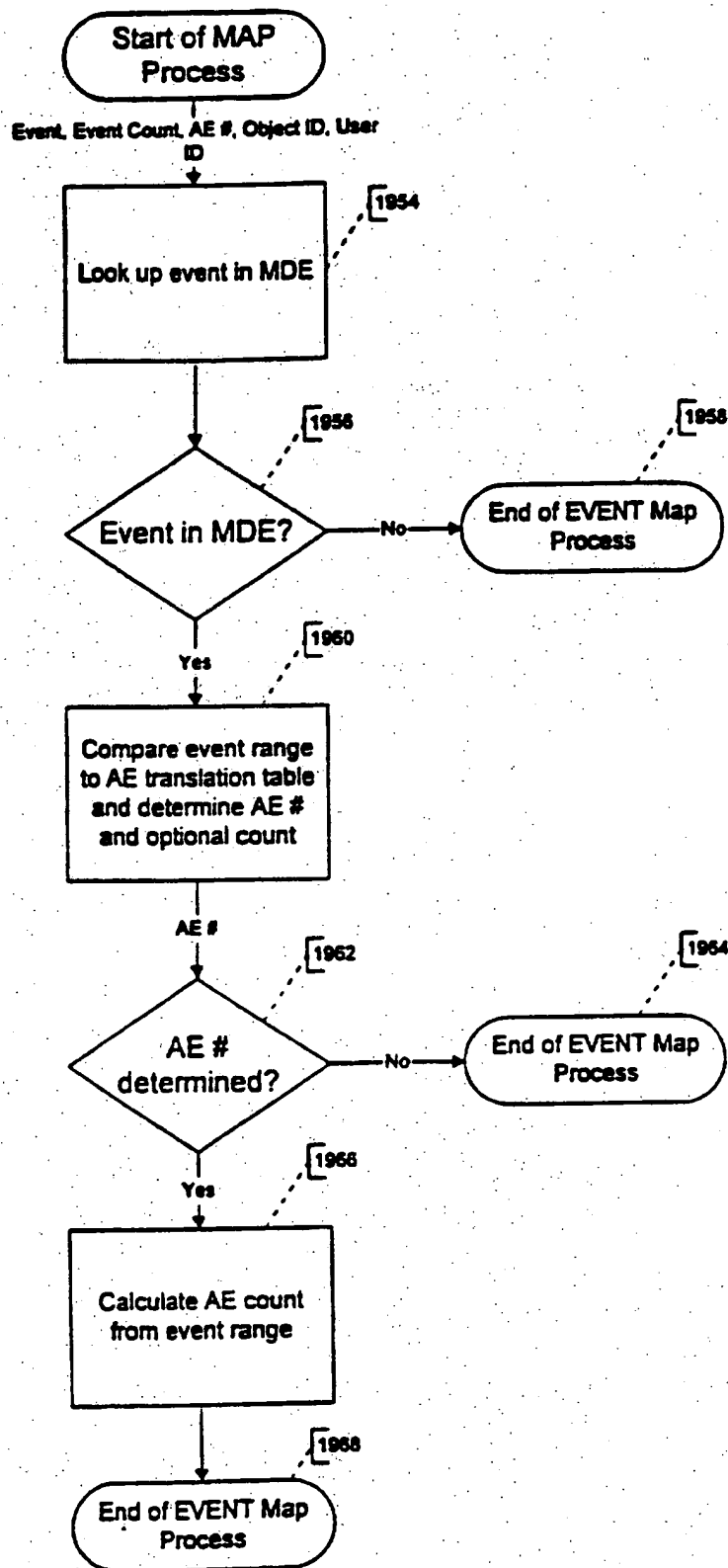


Figure 53b

# BILLING Method Process Flows

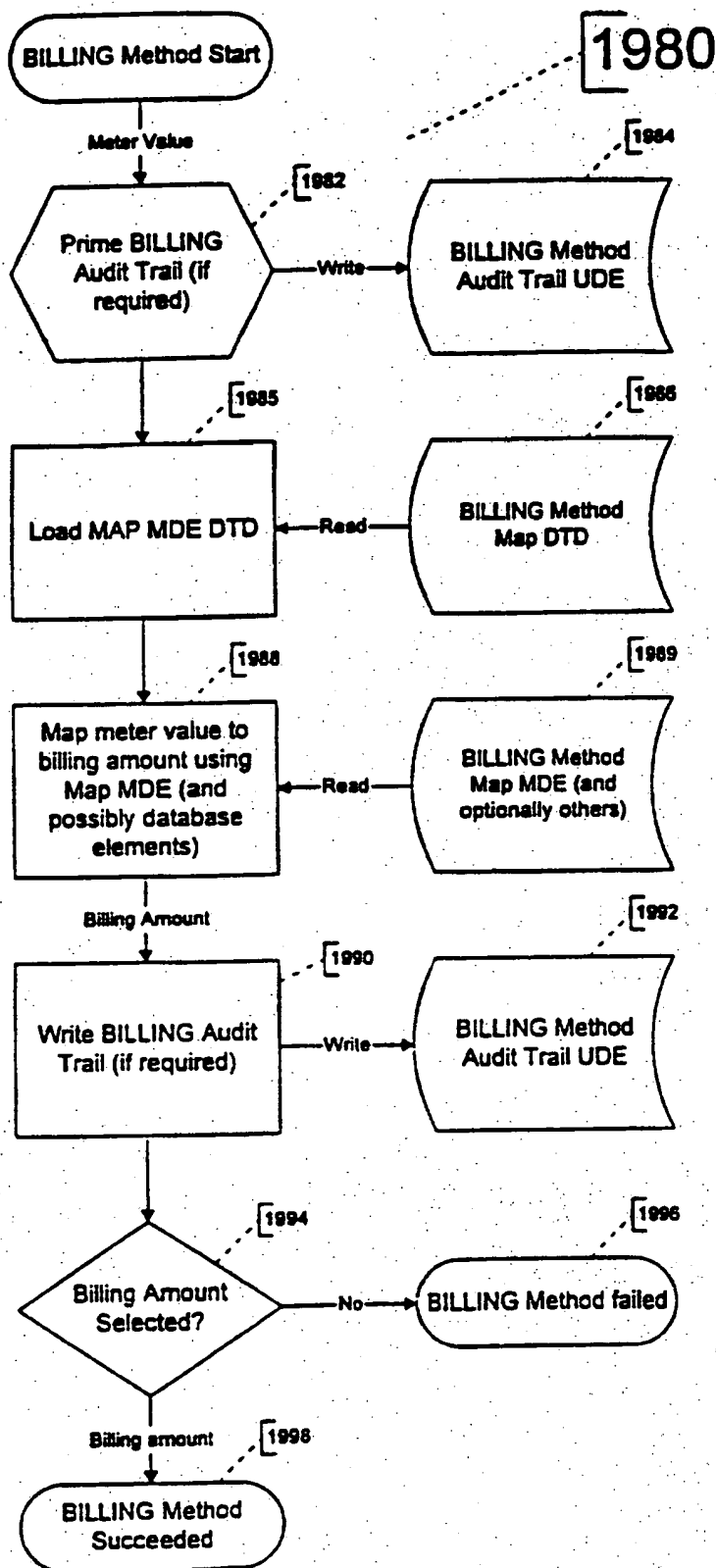
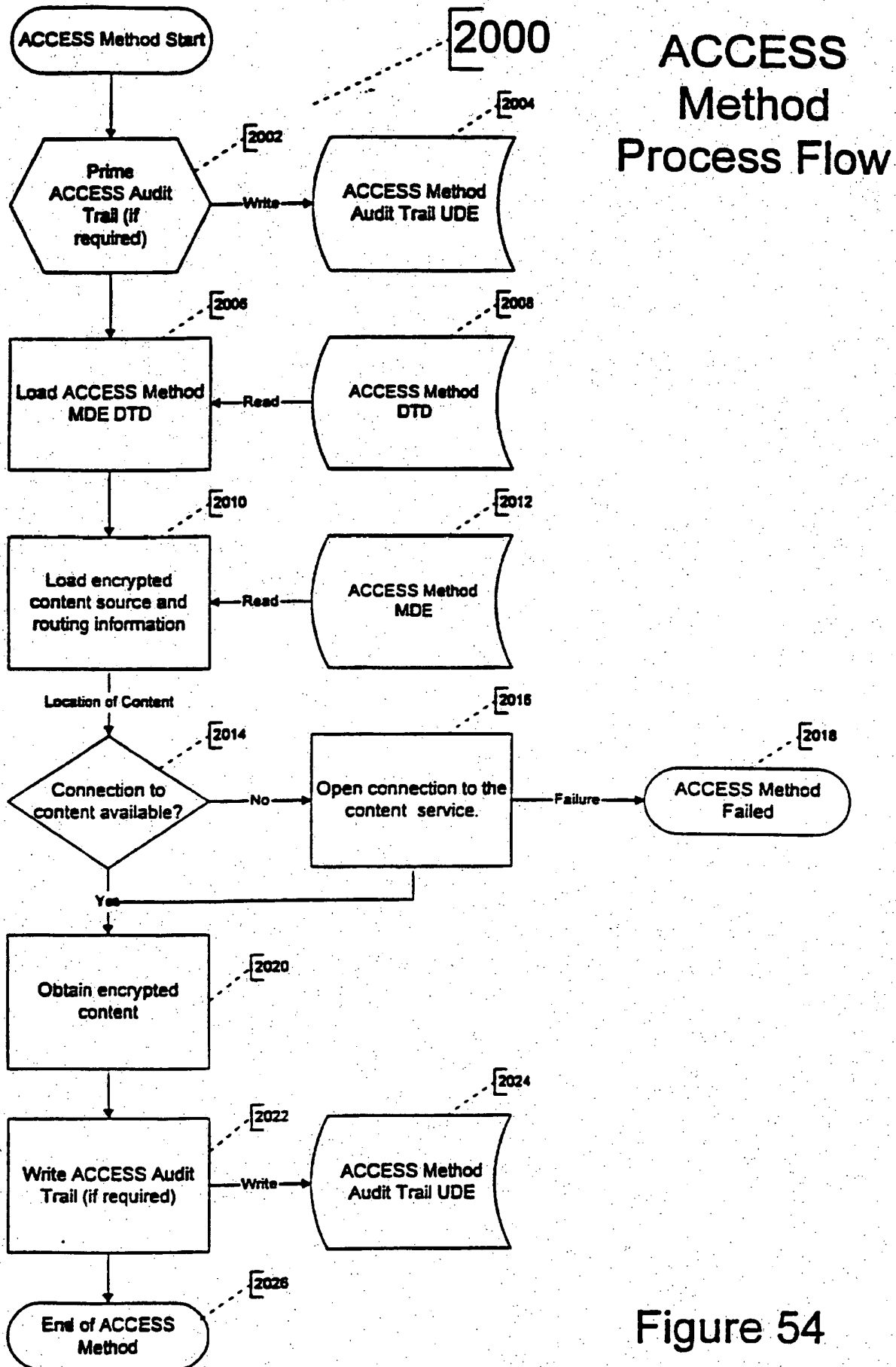


Figure 53c



# DECRYPT Method Process Flow

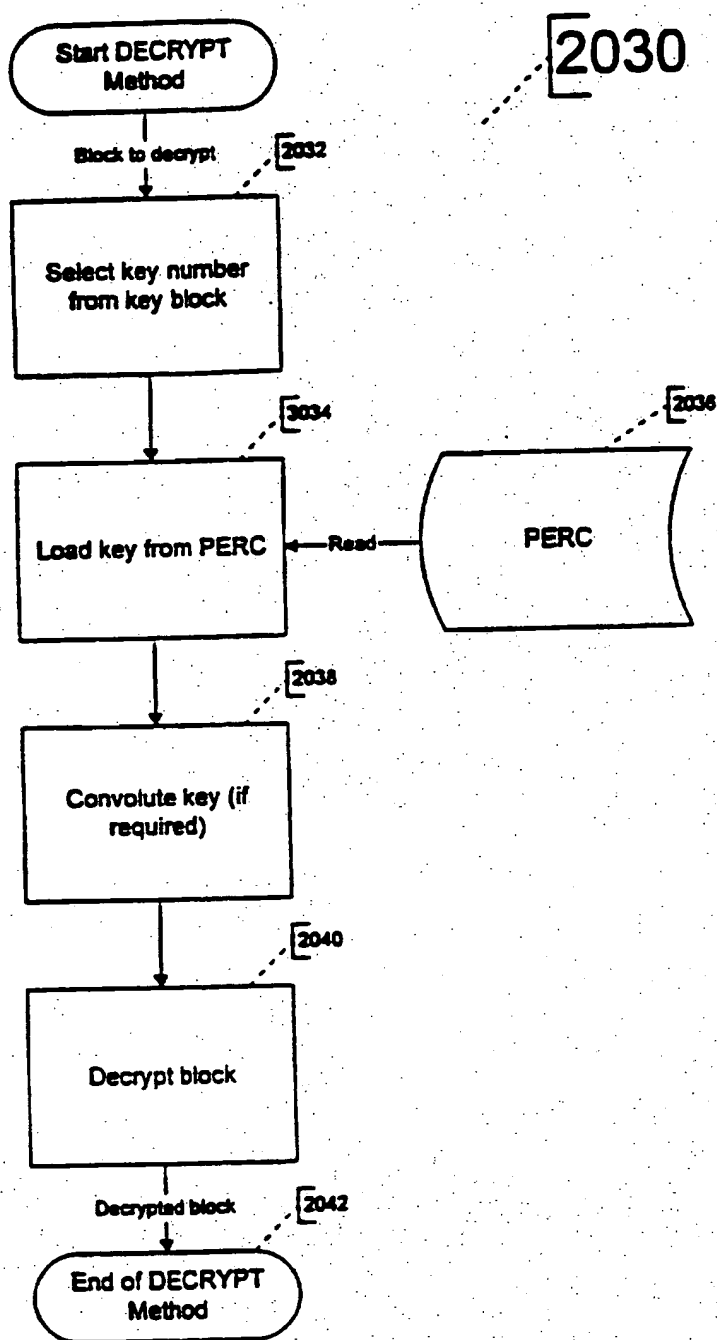
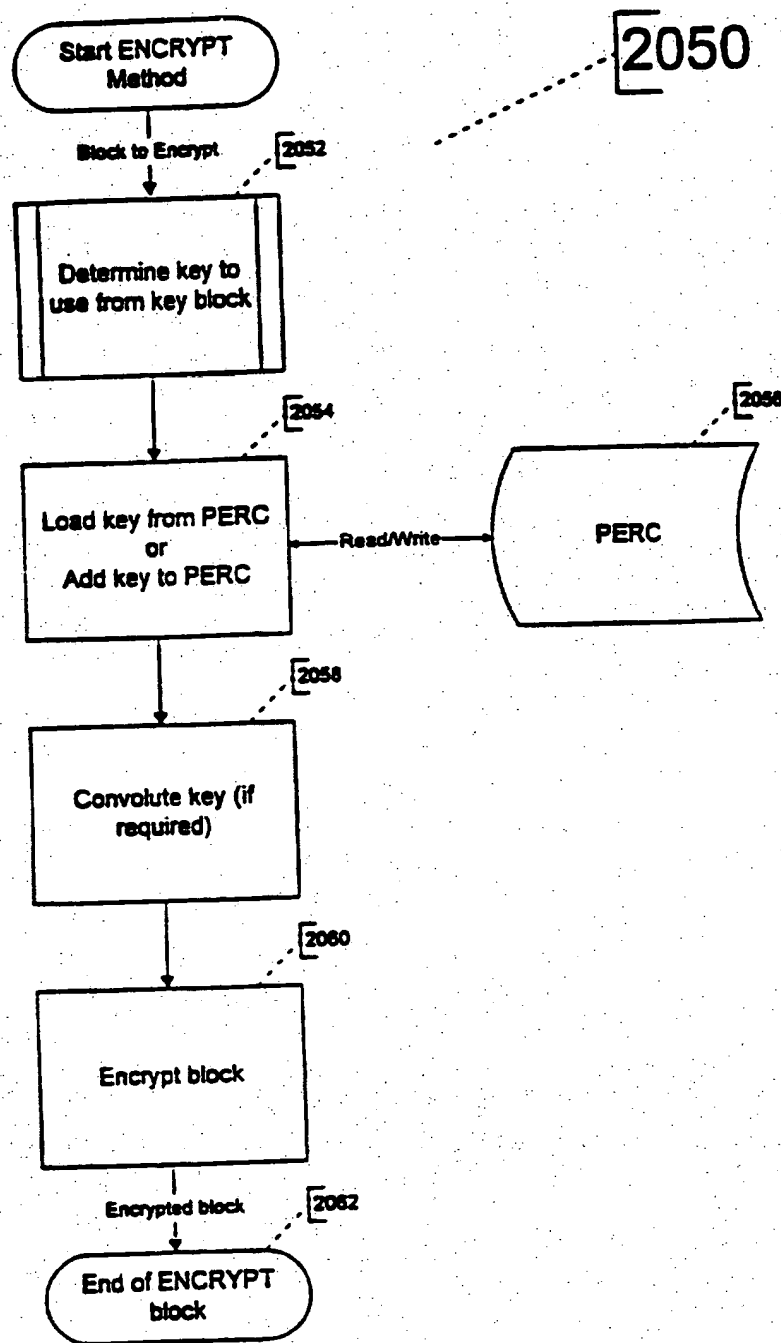
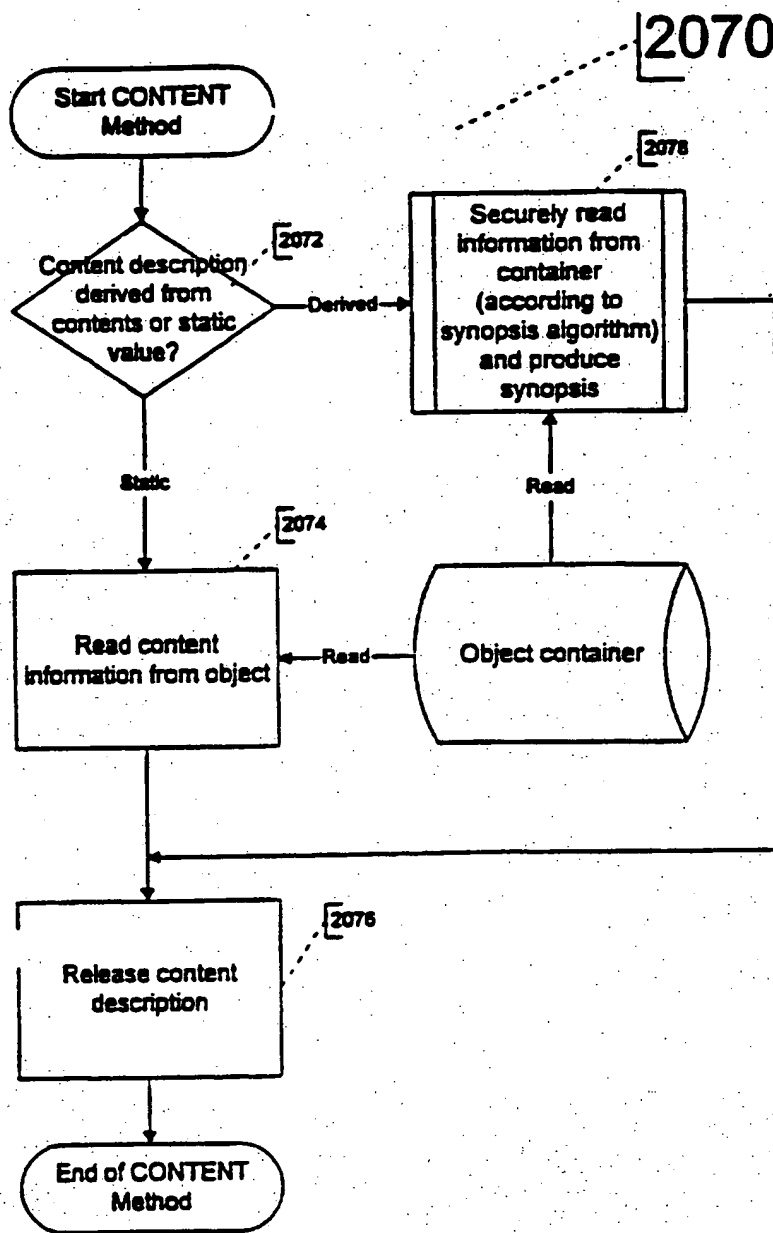


Figure 55a

# ENCRYPT Method Process Flow





## CONTENT Method Process Flow

Figure 56

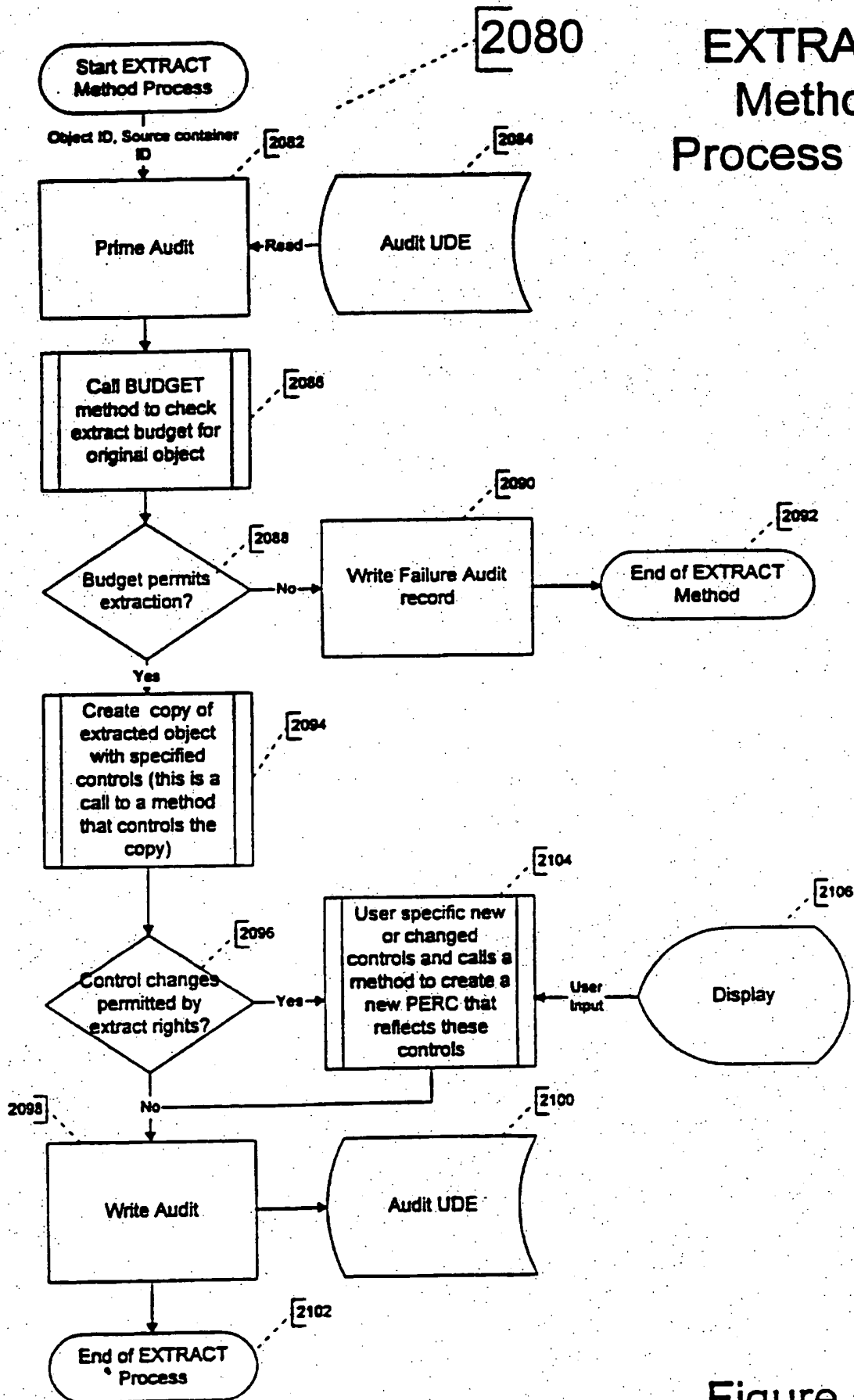


Figure 57a

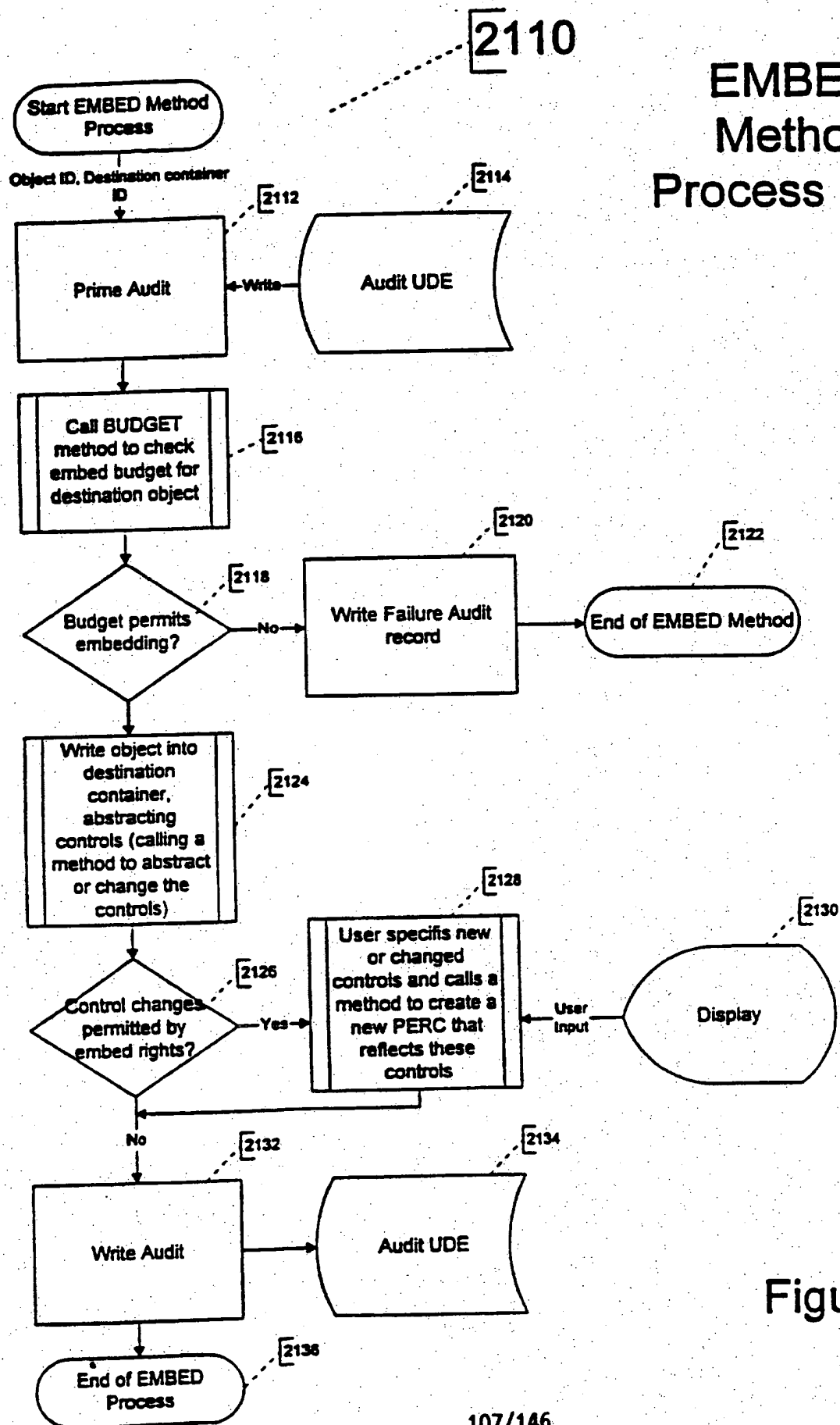


Figure 57b



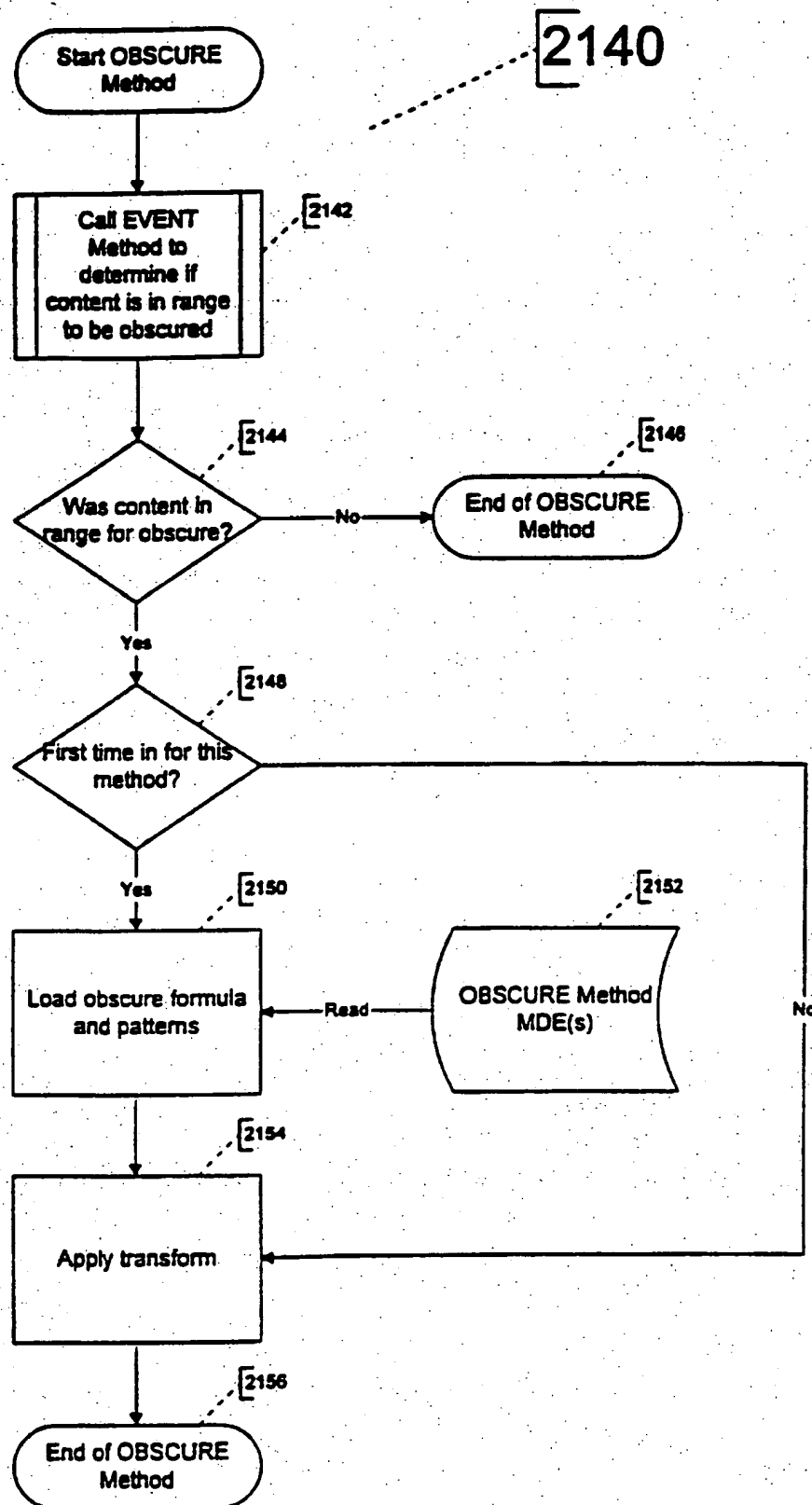


Figure 58a

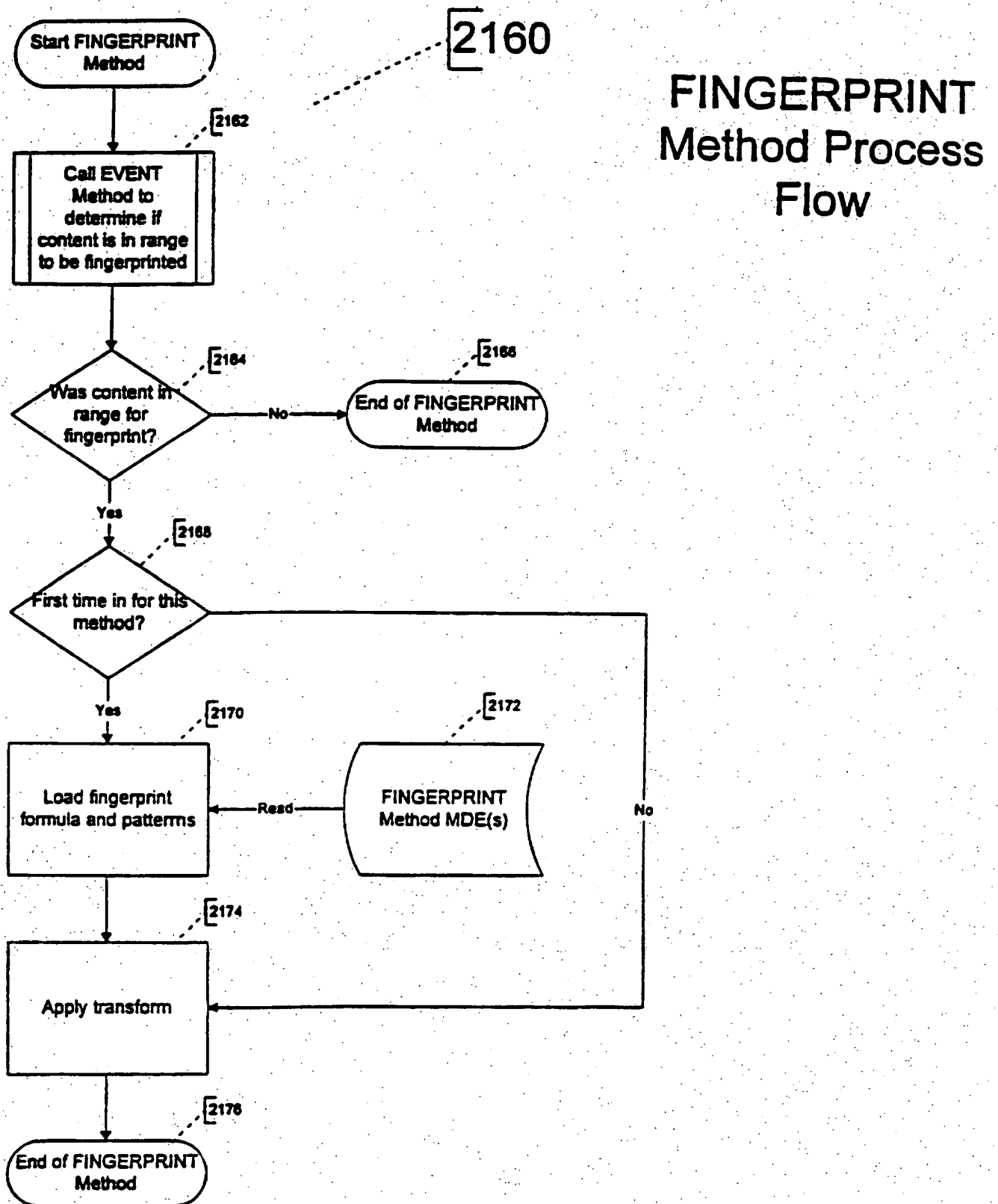


Figure 58b

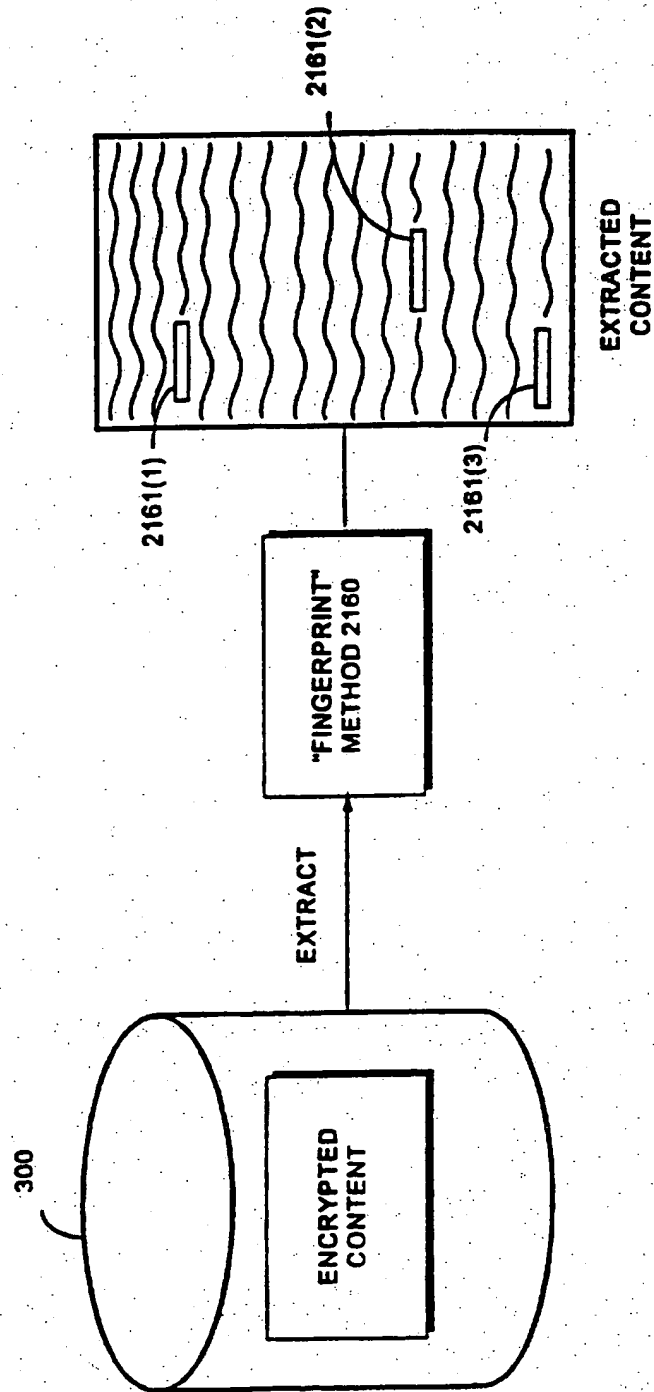


FIG. 58C

# DESTROY Method Process Flow

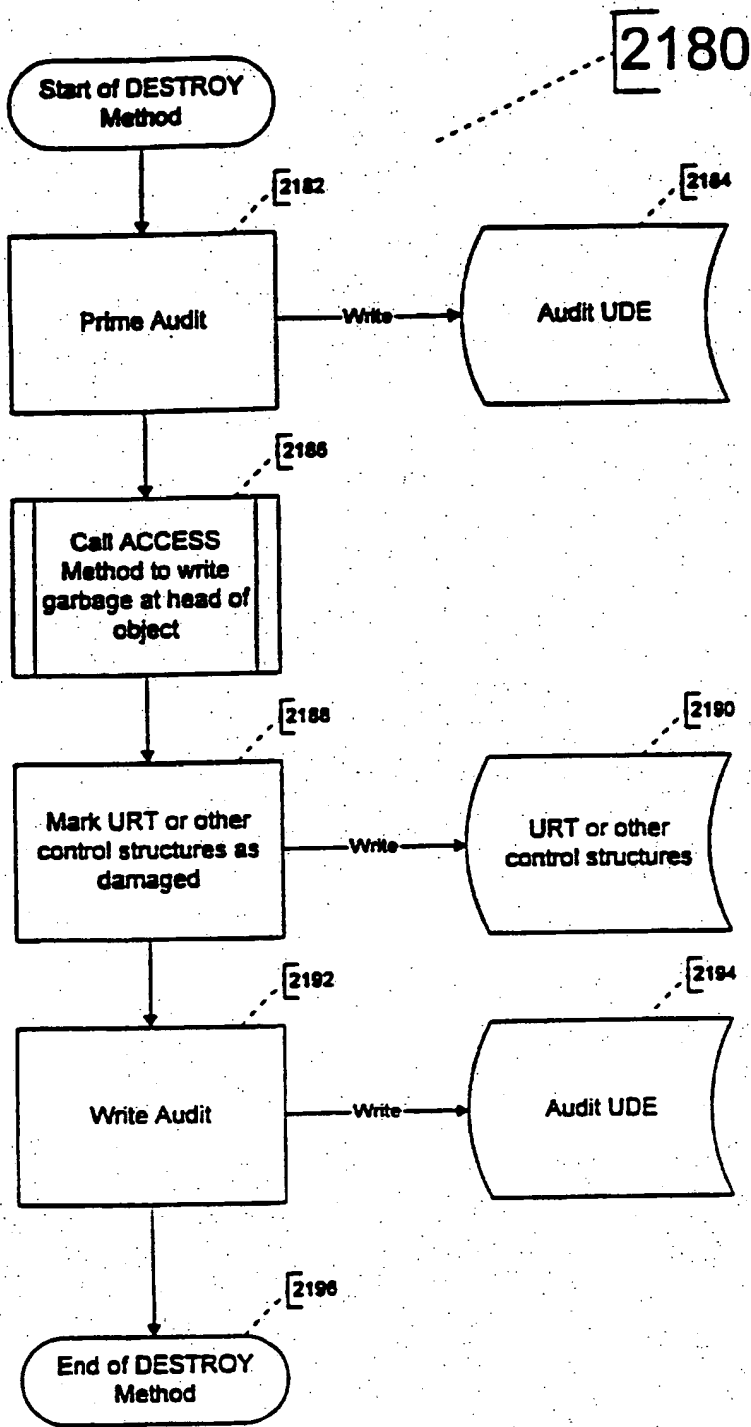


Figure 59

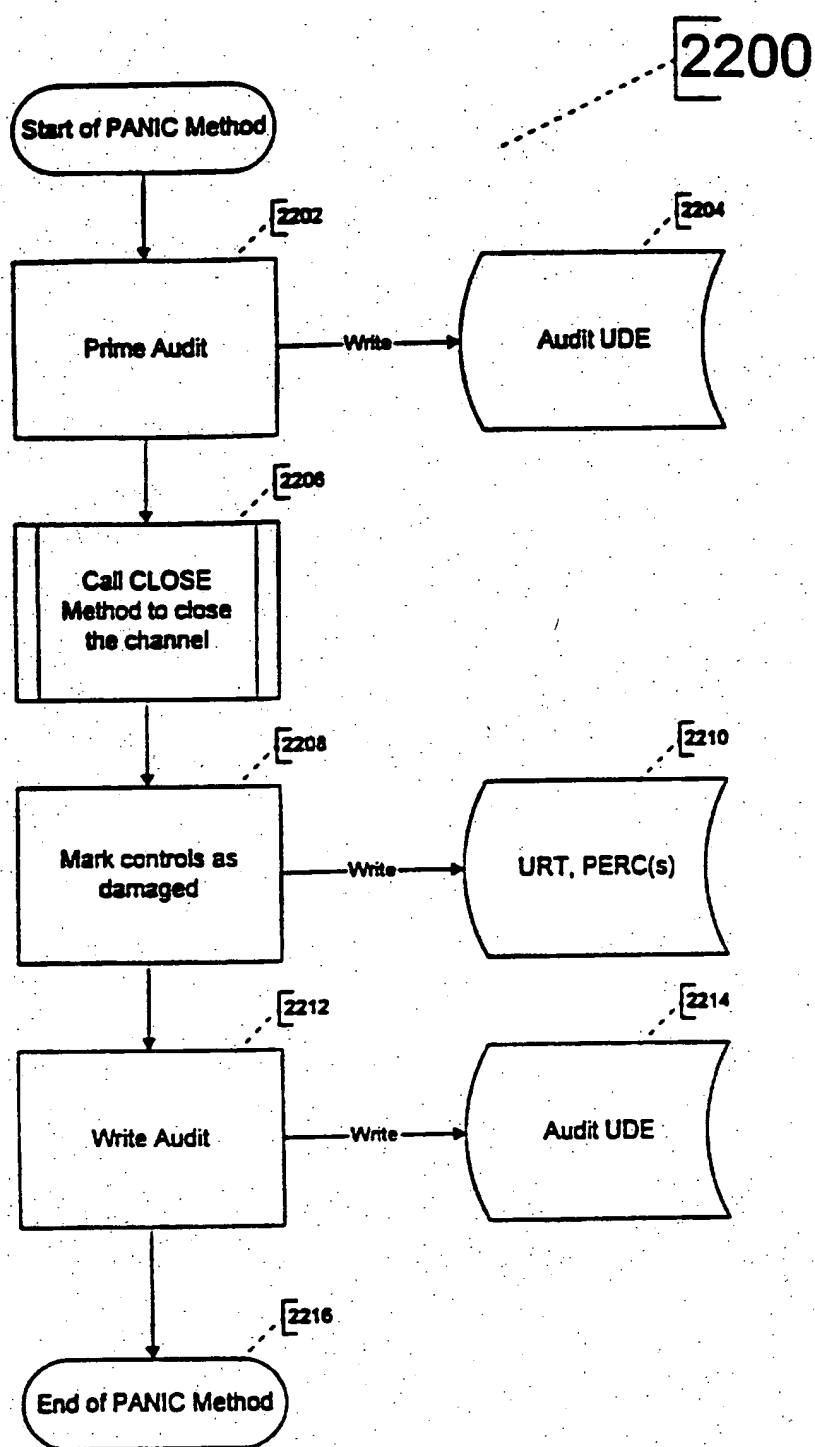
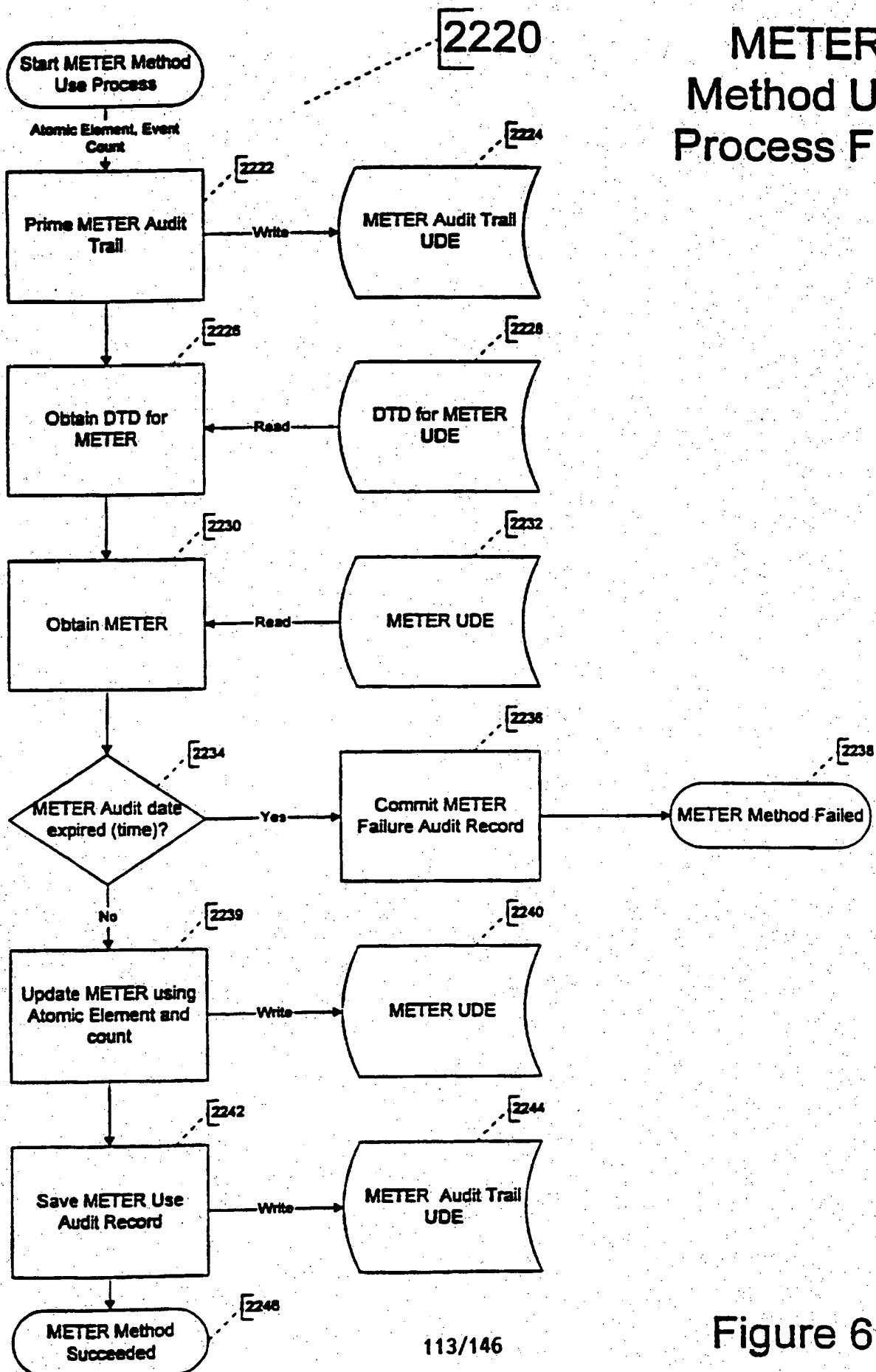
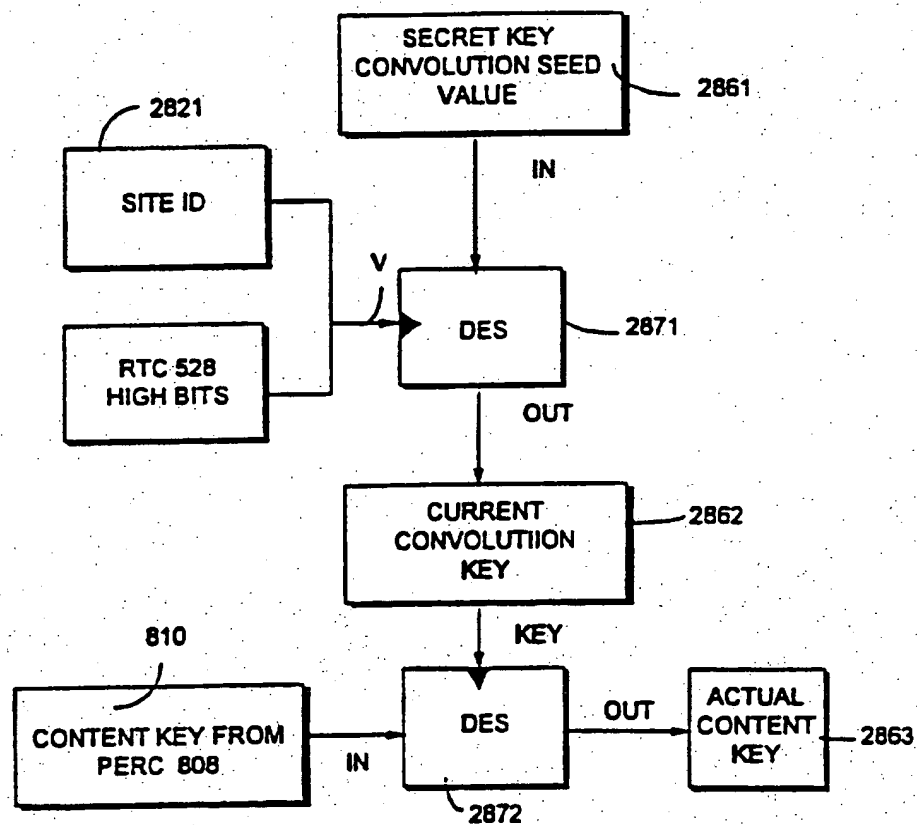


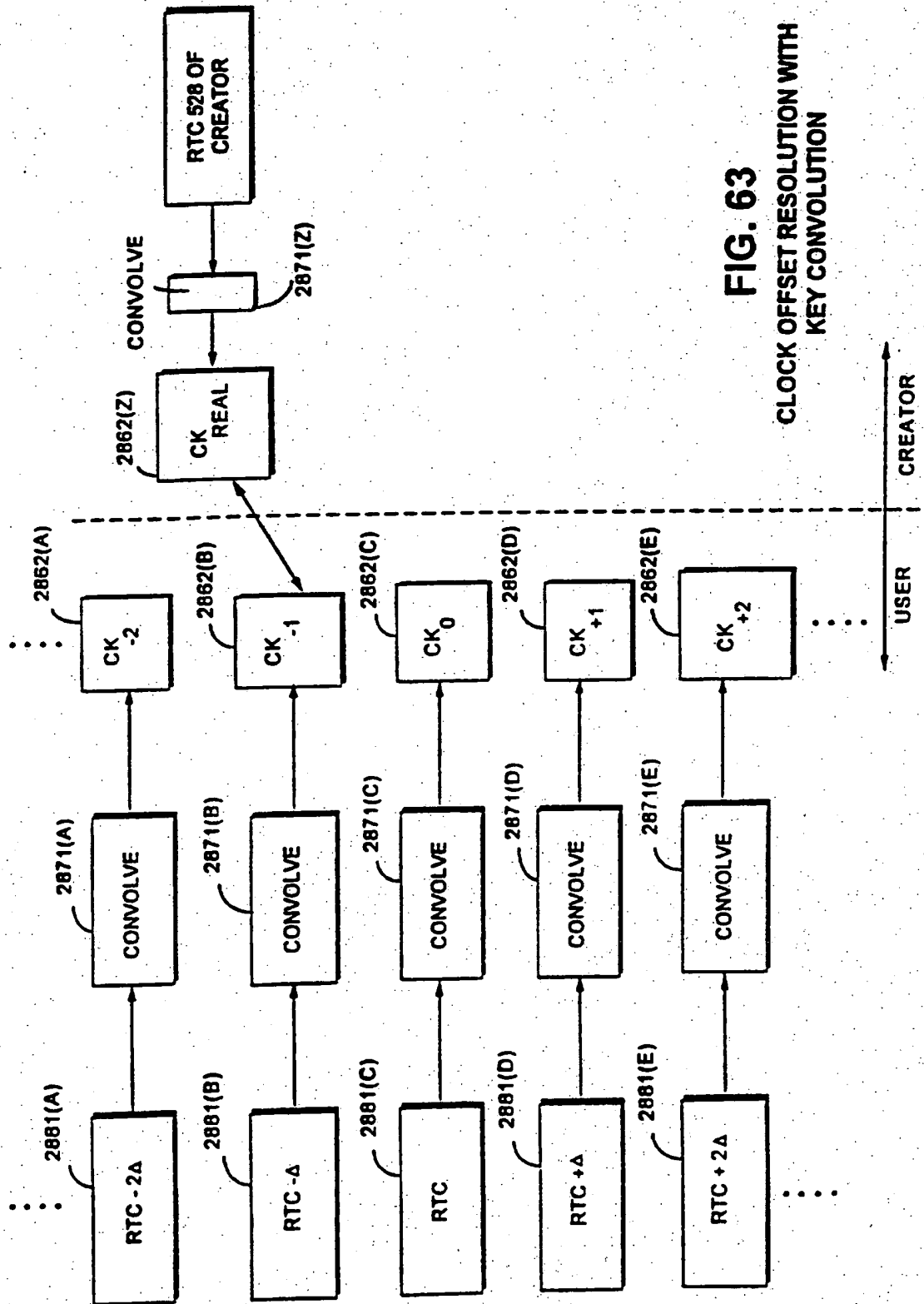
Figure 60

# METER Method Use Process Flow



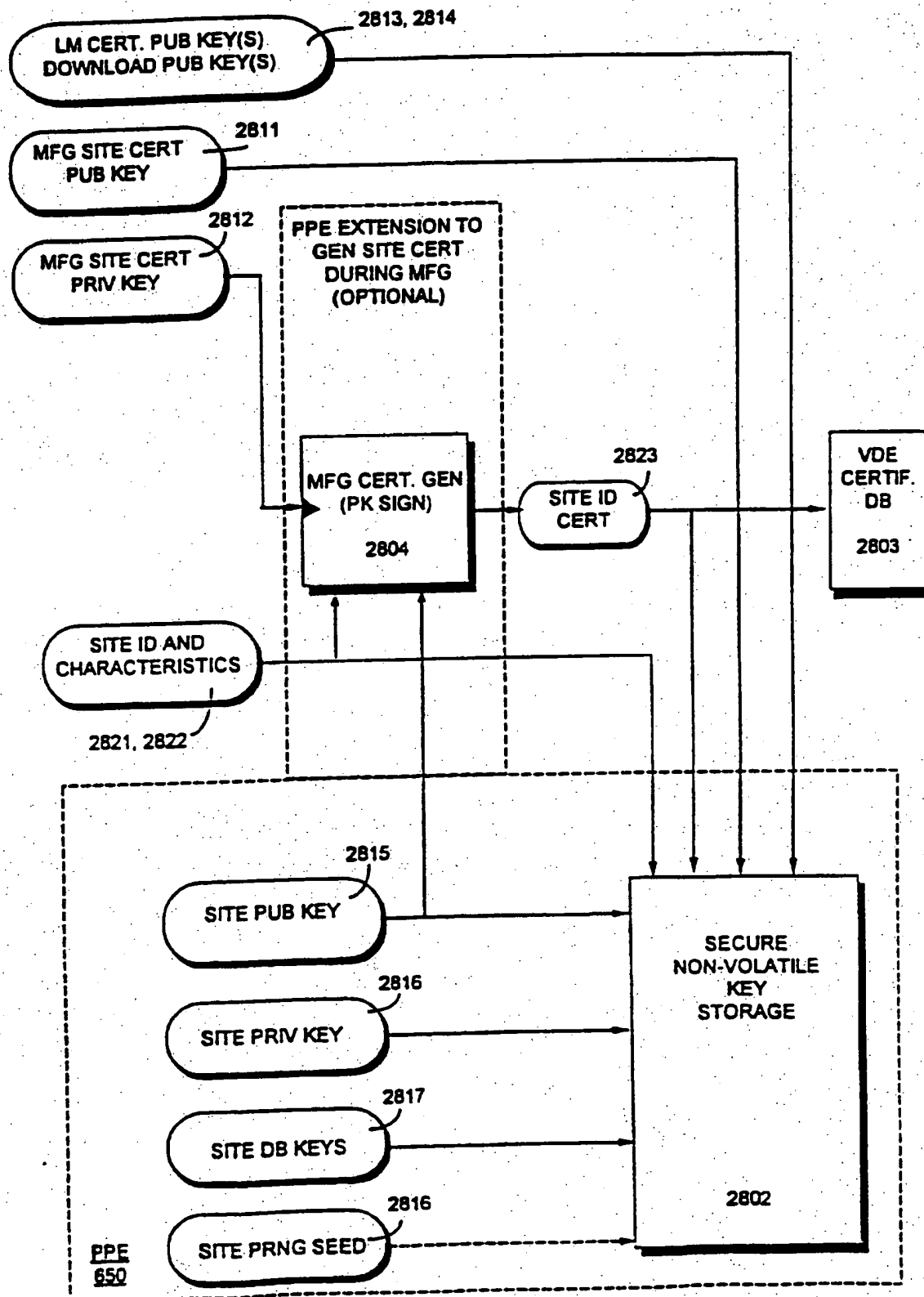
**FIG. 62**  
**KEY CONVOLUTION PROCESS**

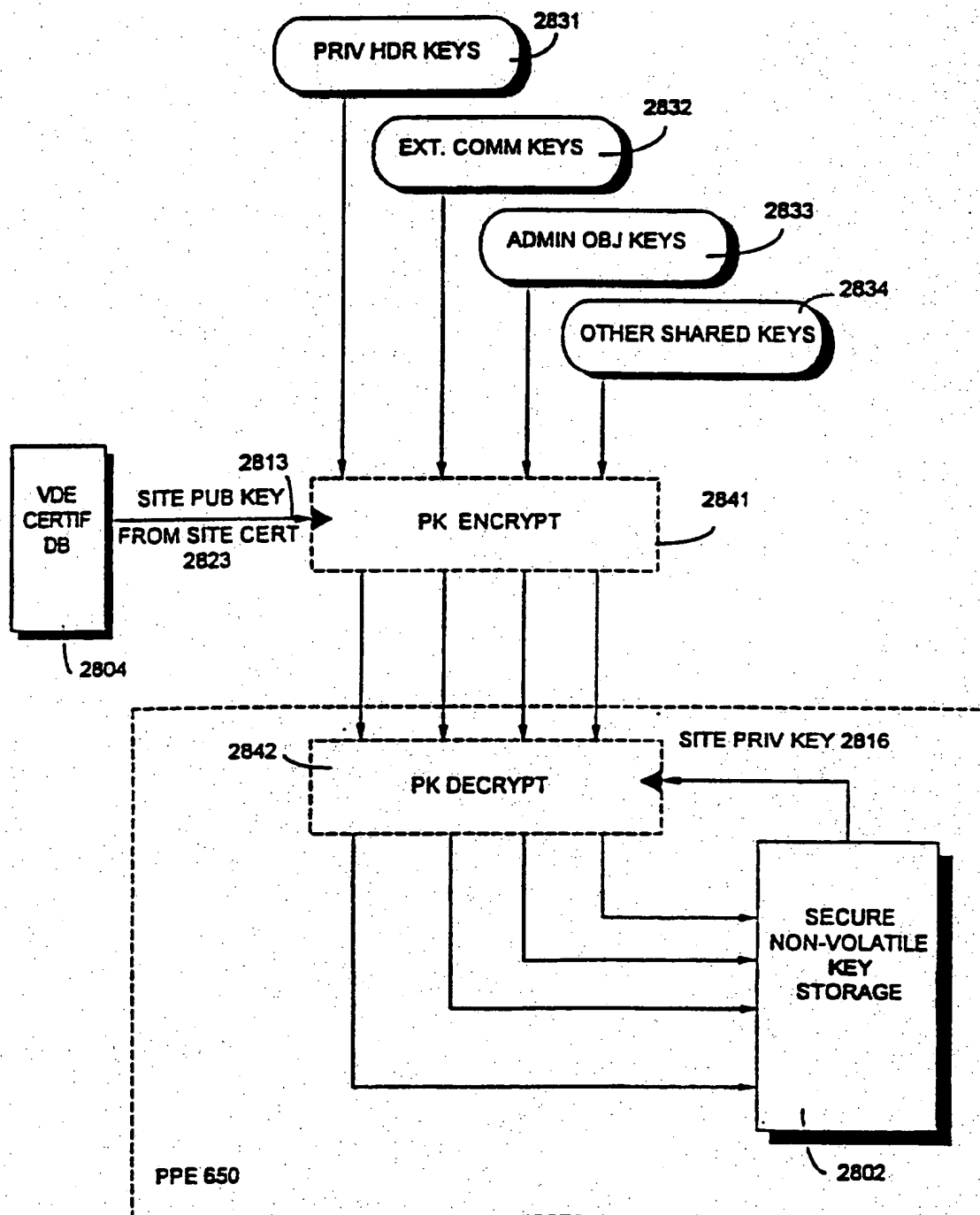


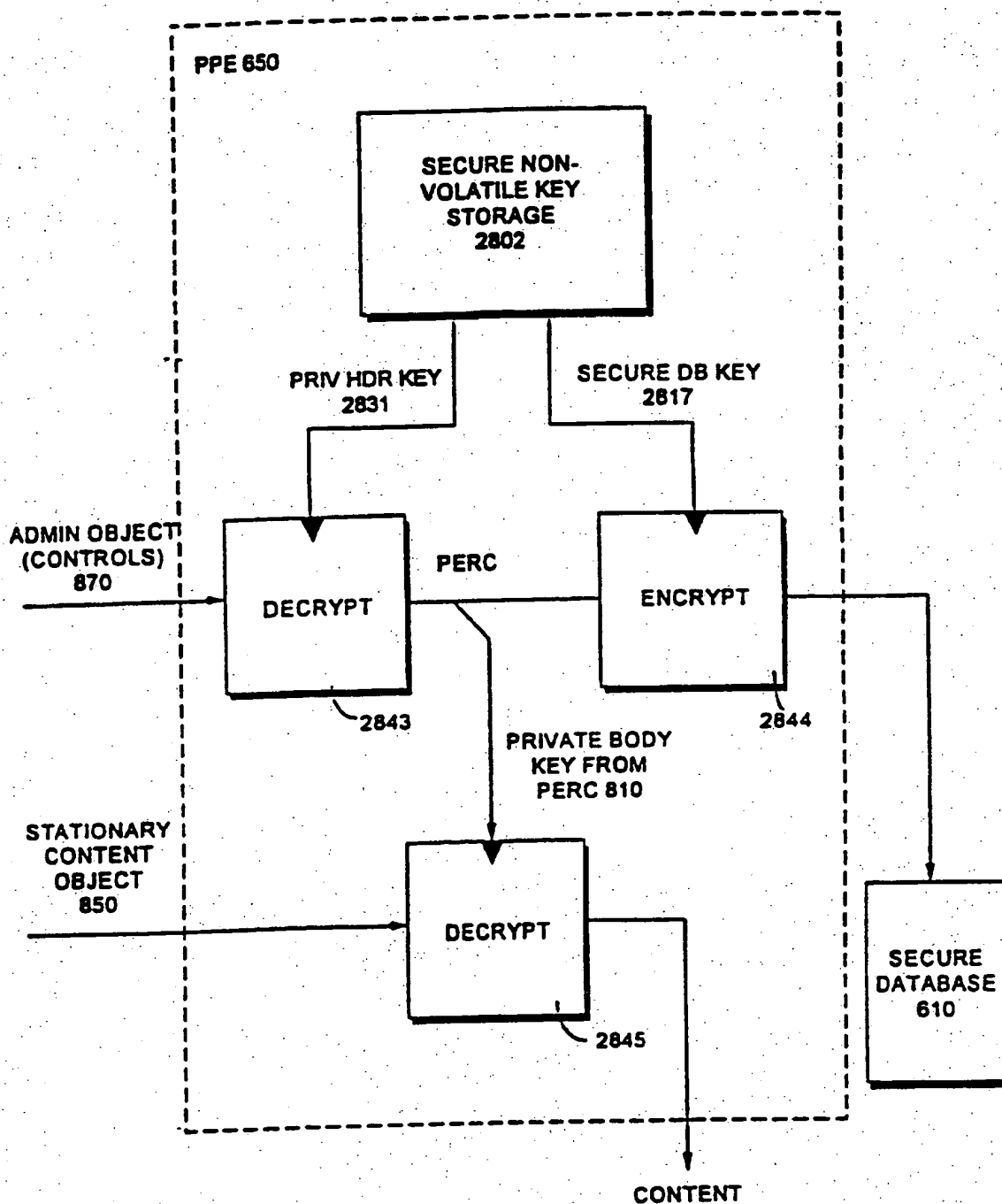


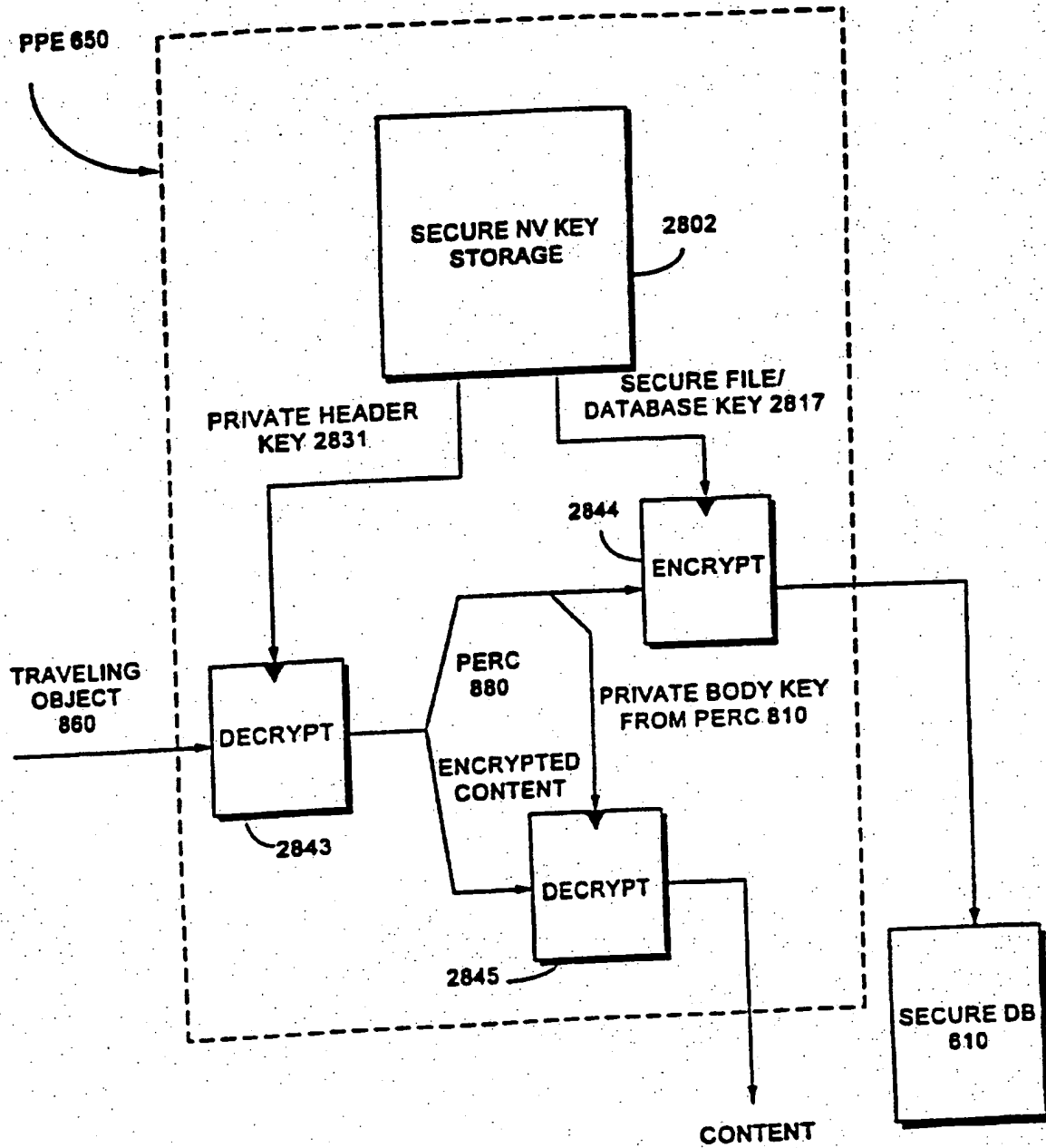
**FIG. 63**  
CLOCK OFFSET RESOLUTION WITH  
KEY CONVOLUTION



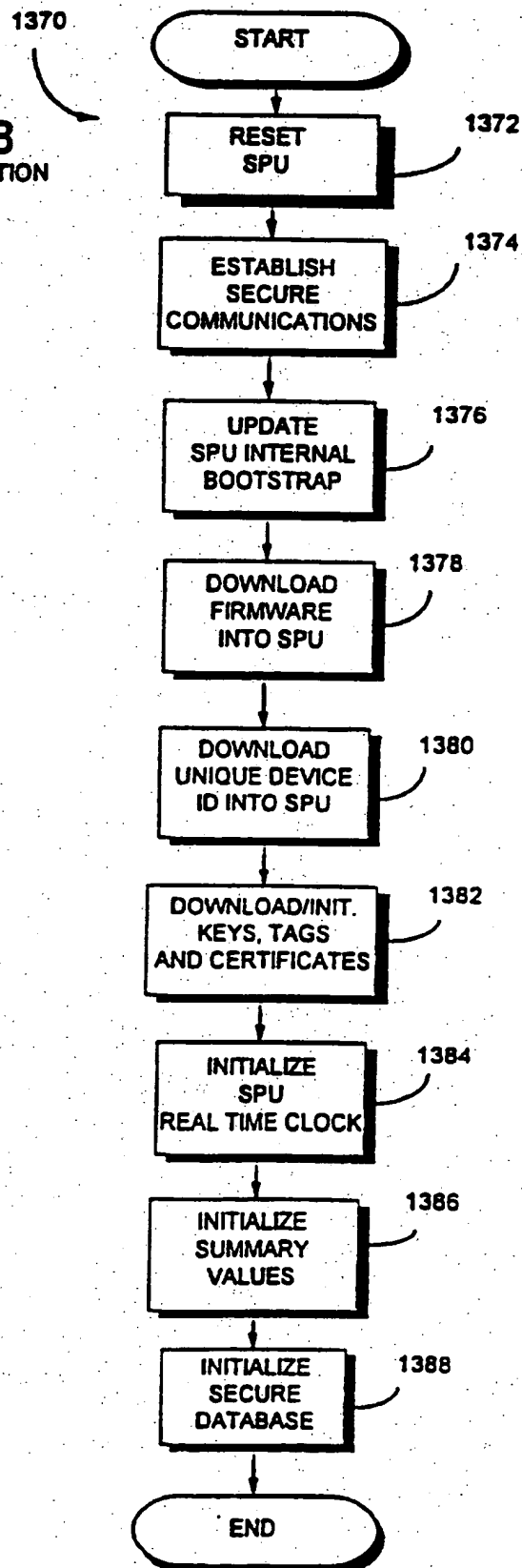
**FIG. 64** SPU KEY INITIALIZATION/INSTALLATION

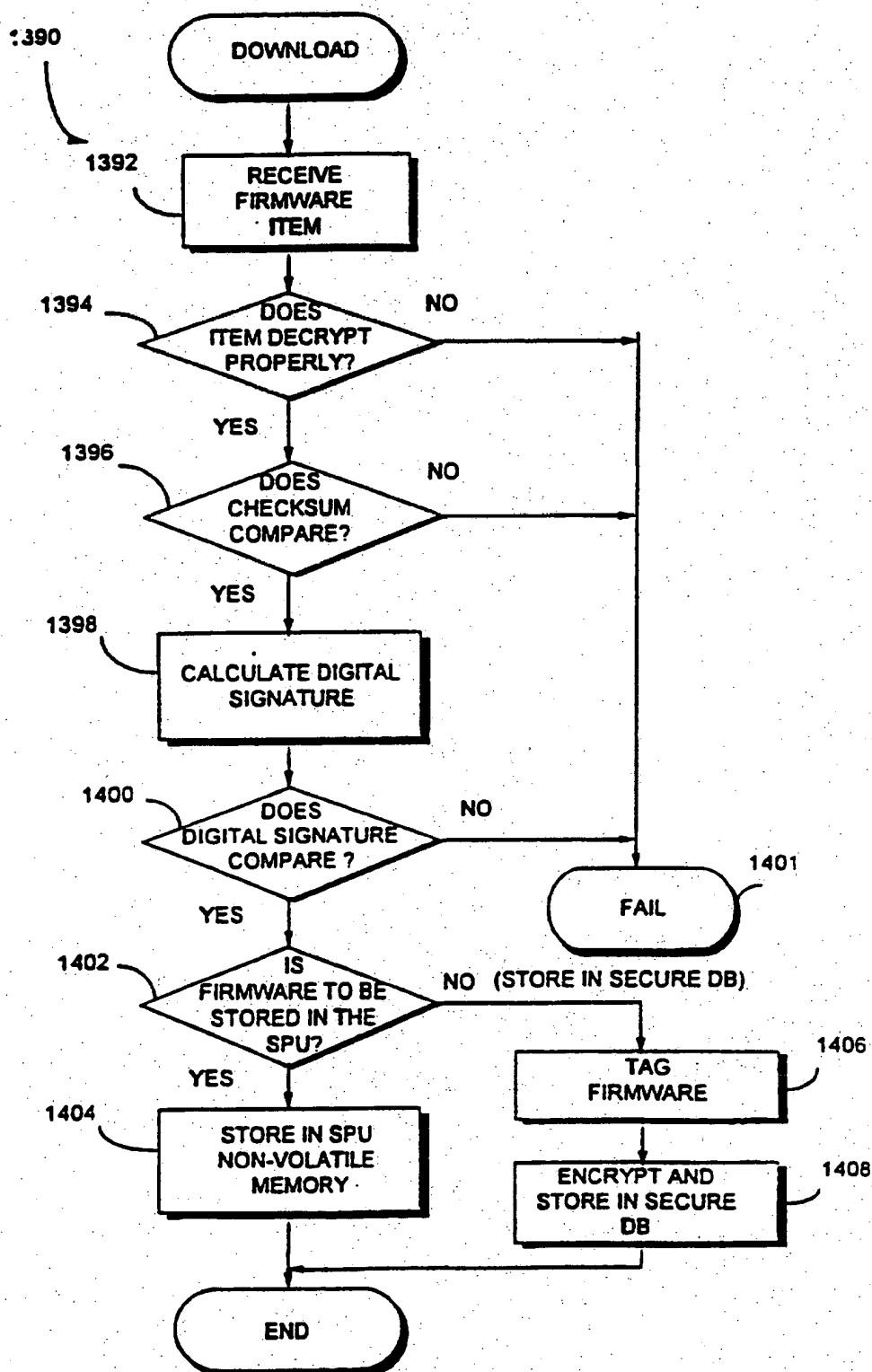
**FIG. 65** KEY INSTALLATION & UPDATE

**FIG. 66** STATIONARY OBJECT DECRYPTION

**FIG. 67** TRAVELING OBJECT DECRYPTION

**FIG. 68**  
SPU INITIALIZATION





**FIG. 69**  
SPU FIRMWARE  
DOWNLOAD

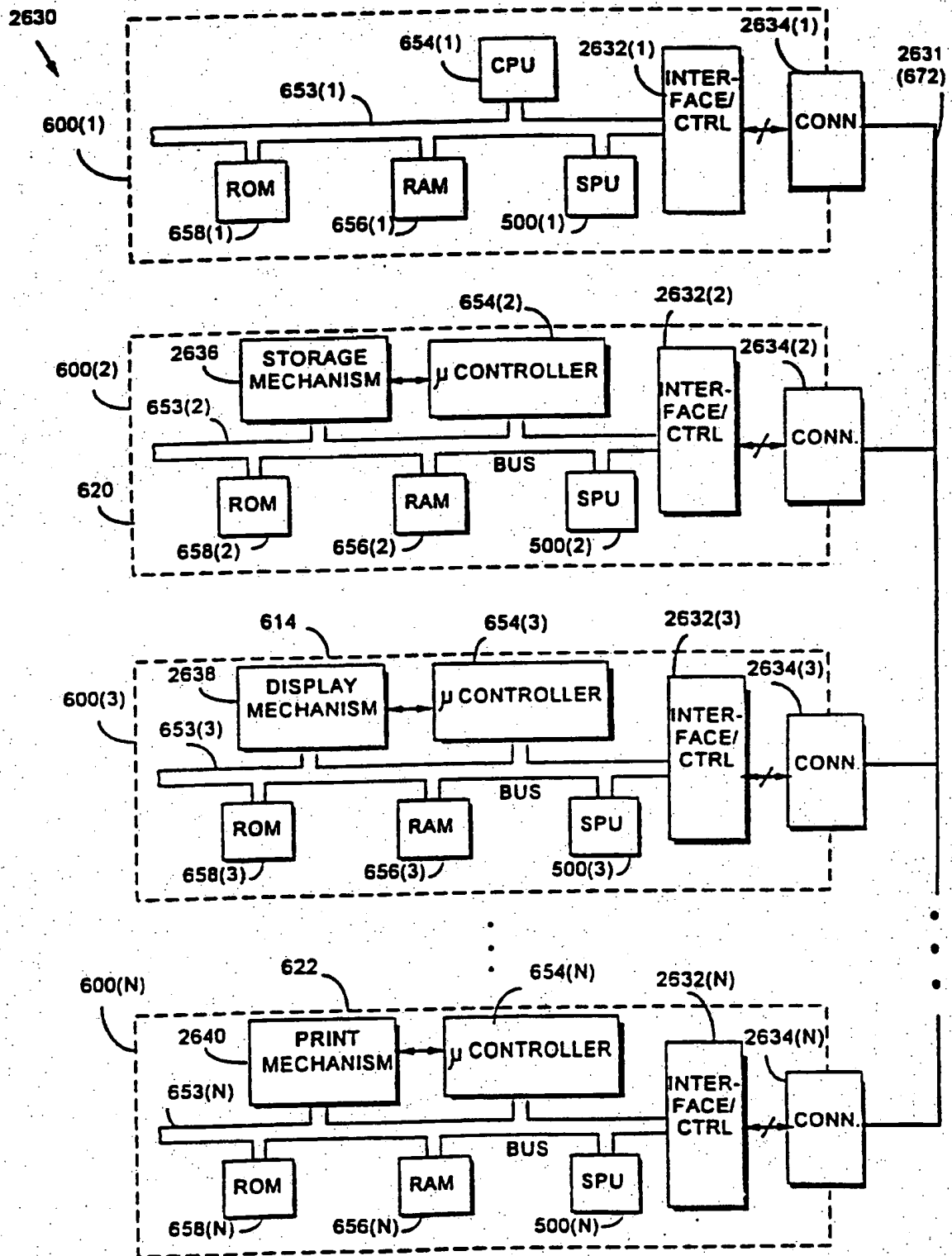
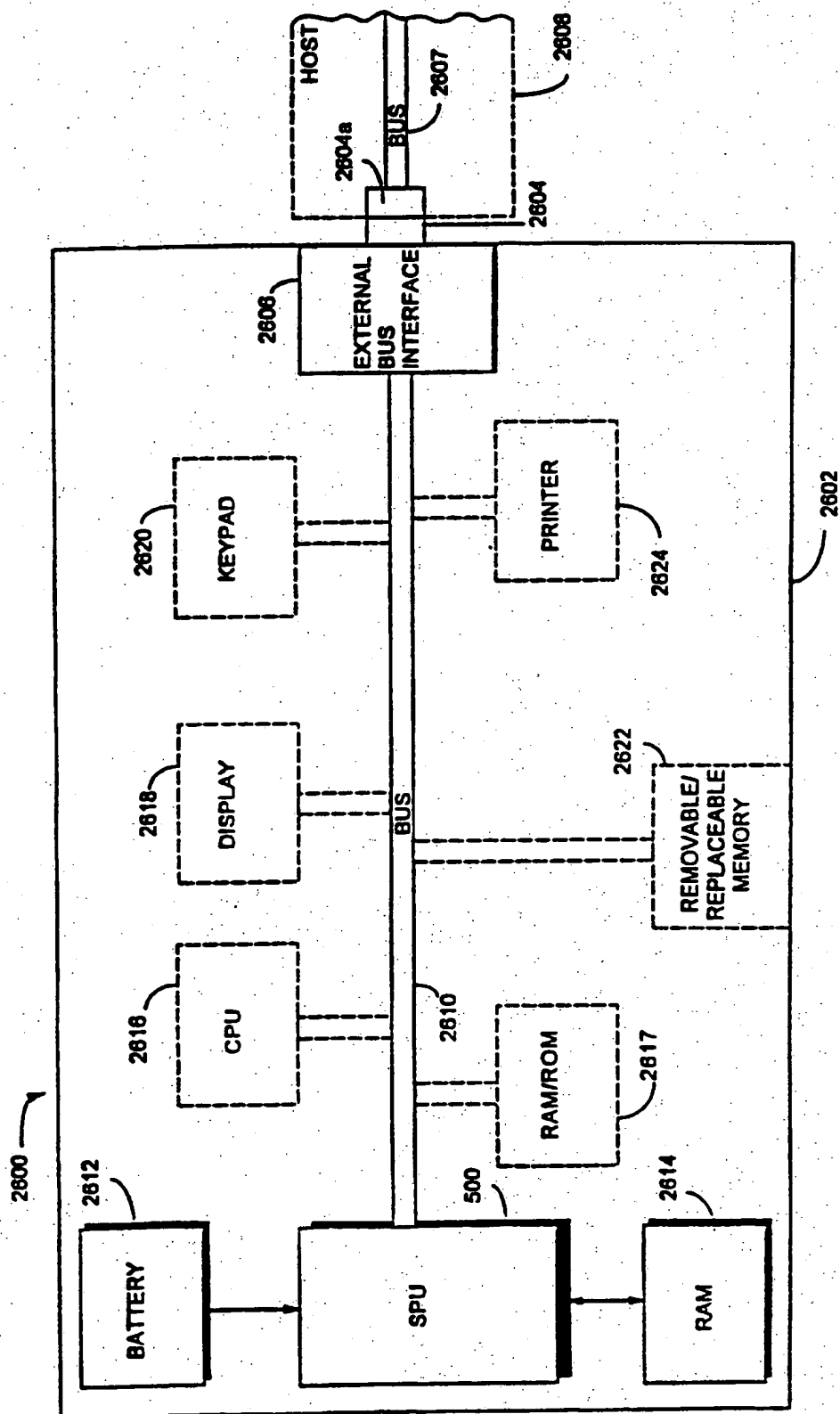


FIG. 70

FIG. 71

PORTABLE APPLIANCE





LOG IN USER INTERFACE

182

USER NAME: SHEAR, V.

PASSWORD: \* \* \* \* \*

☐ LOGIN AT STARTUP

LOGIN

CANCEL


HELP

FIG. 72A

FIG. 72B

2660

YOU HAVE REQUESTED THESE PROPERTIES:

 LOONEY TUNES NEWS!

2662

APPROVE

CANCEL

SUSPEND

PROPERTY INFO

Your Cost: \$7.50

MORE OPTIONS

2664

FIG. 72C

**SET LIMITS:**

SESSION DOLLAR LIMIT: \$

TRANSACTION DOLLAR LIMIT: \$

TIME LIMIT (IN MINUTES):

UNIT LIMIT:

2666 (points to Session Dollar Limit input field)

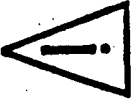
2674 (points to OK button)

2668 (points to Transaction Dollar Limit input field)

2670 (points to Time Limit input field)

2672 (points to Unit Limit input field)

FIG. 72D



**YOU HAVE REQUESTED THESE PROPERTIES:**

**LOONEY TUNE NEWS!**

**YOUR COST : \$7.50**

CANCEL

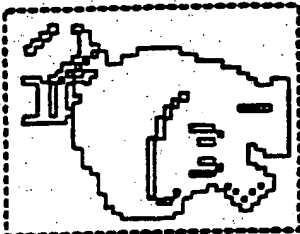
APPROVE

SUSPEND

PROPERTY INFO

More Options ☒

Show Thumbnail



PROPERTY:	SIZE:	PUBLISHER:	AMOUNT:	UNITS:	COST/UNIT:	TYPE:	USE?	LINKS:	HIST:
CHUCK JONES BIOGRA...	256KB	WARNER NEW MEDIA	64	KBYTE	\$1.25	PREVIEW	✓	●	
▼ BUGS BUNNY.JPE...	1MB	WARNER NEW MEDIA	1	RECORD	\$5.00	DISPLAY	✓	●	
BUGS BUNNY.JPEG...	1MB	WARNER NEW MEDIA	10	RECORD	\$3.50	DISPLAY		●	
BUGS BUNNY.JPEG...	1MB	WARNER NEW MEDIA	25	RECORD	\$2.50	DISPLAY		●	
FRIZ FRELENG BIOGRA...	256KB	WARNER NEW MEDIA	120	SECTOR	\$5.00	PRINT			
TEX AVERY BIOGRAP...	256KB	WARNER NEW MEDIA	50	PERCENT	\$2.50	COPY			
► DUCKI RABBITI DU...	64MB	WARNER NEW MEDIA	7.0	MINUTE	\$7.50	COPY-PRO			
MEL BLANC BIOGRAPH...	256KB	WARNER NEW MEDIA	1	SPECIAL	\$25.25	INSTALL			
LOONEY TUNES DATAB...	600MB	WARNER NEW MEDIA	1	OBJECT	\$2000.00	ALL		●	

SET LIMITS...

SHOW BUDGETS

ACQUIRE BUDGET...

HISTORY...

TRANSFER...

PREFERENCES...

FEEDBACK...

HELP!

FIG. 73

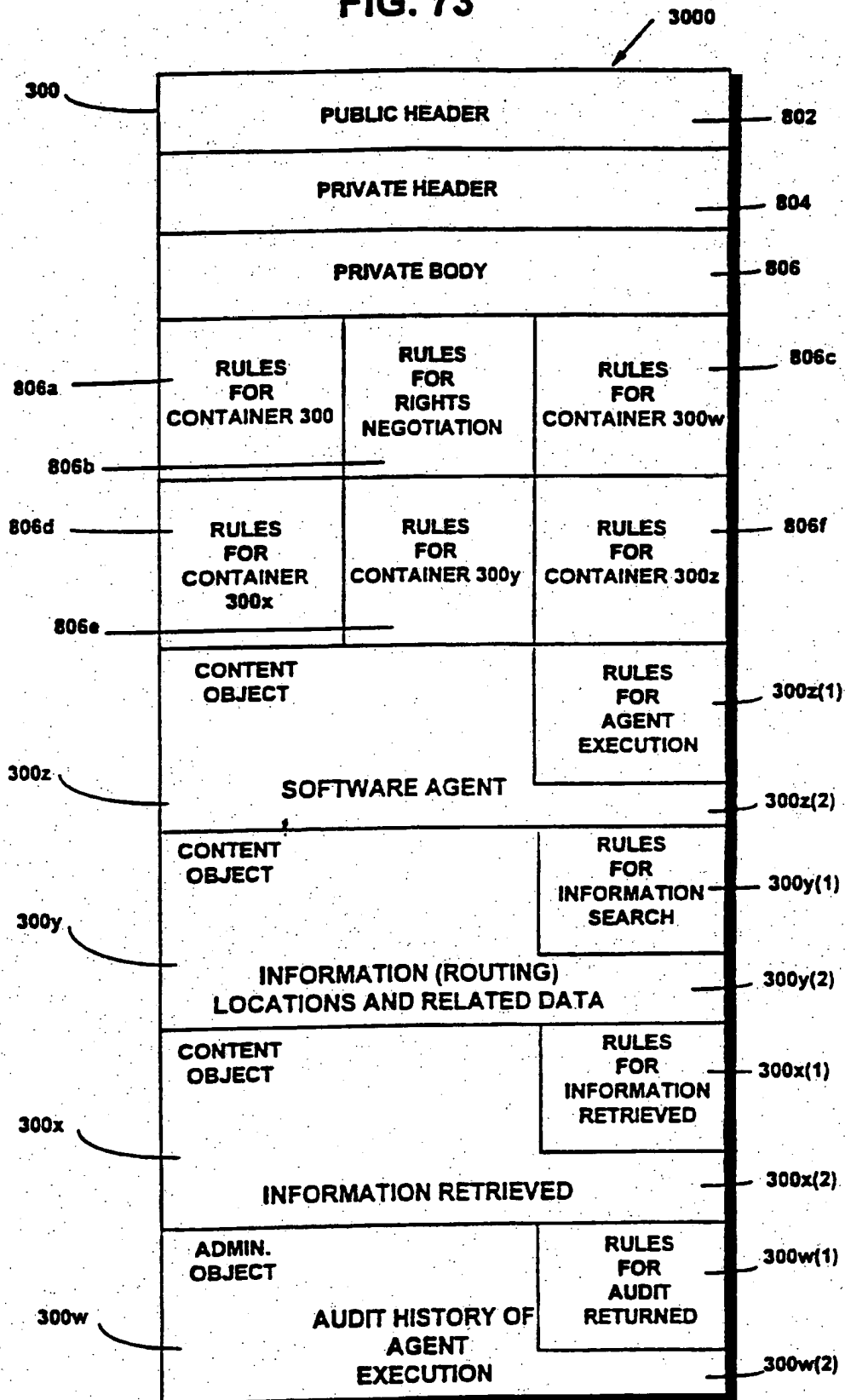


FIG. 74

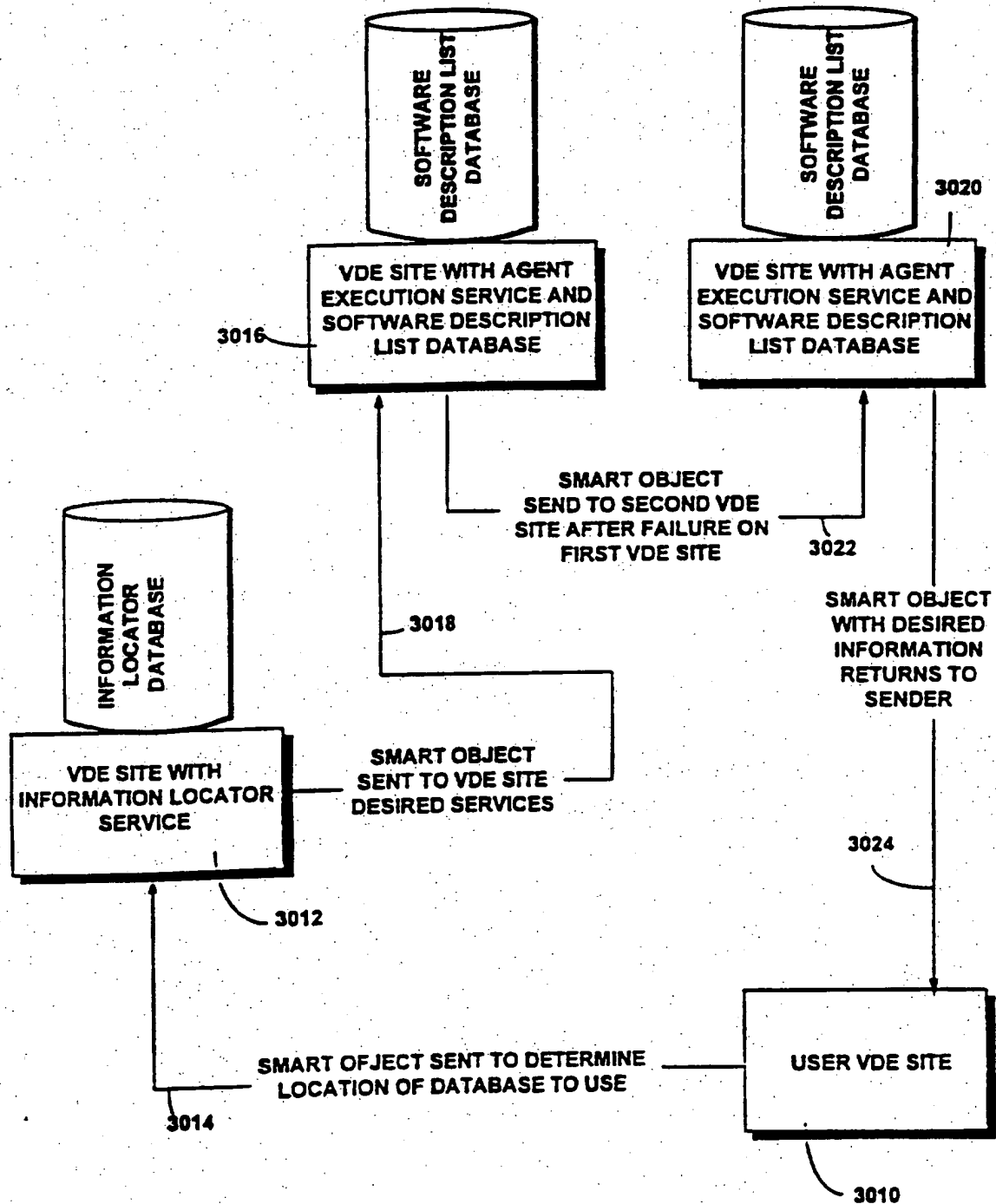


FIG. 75A

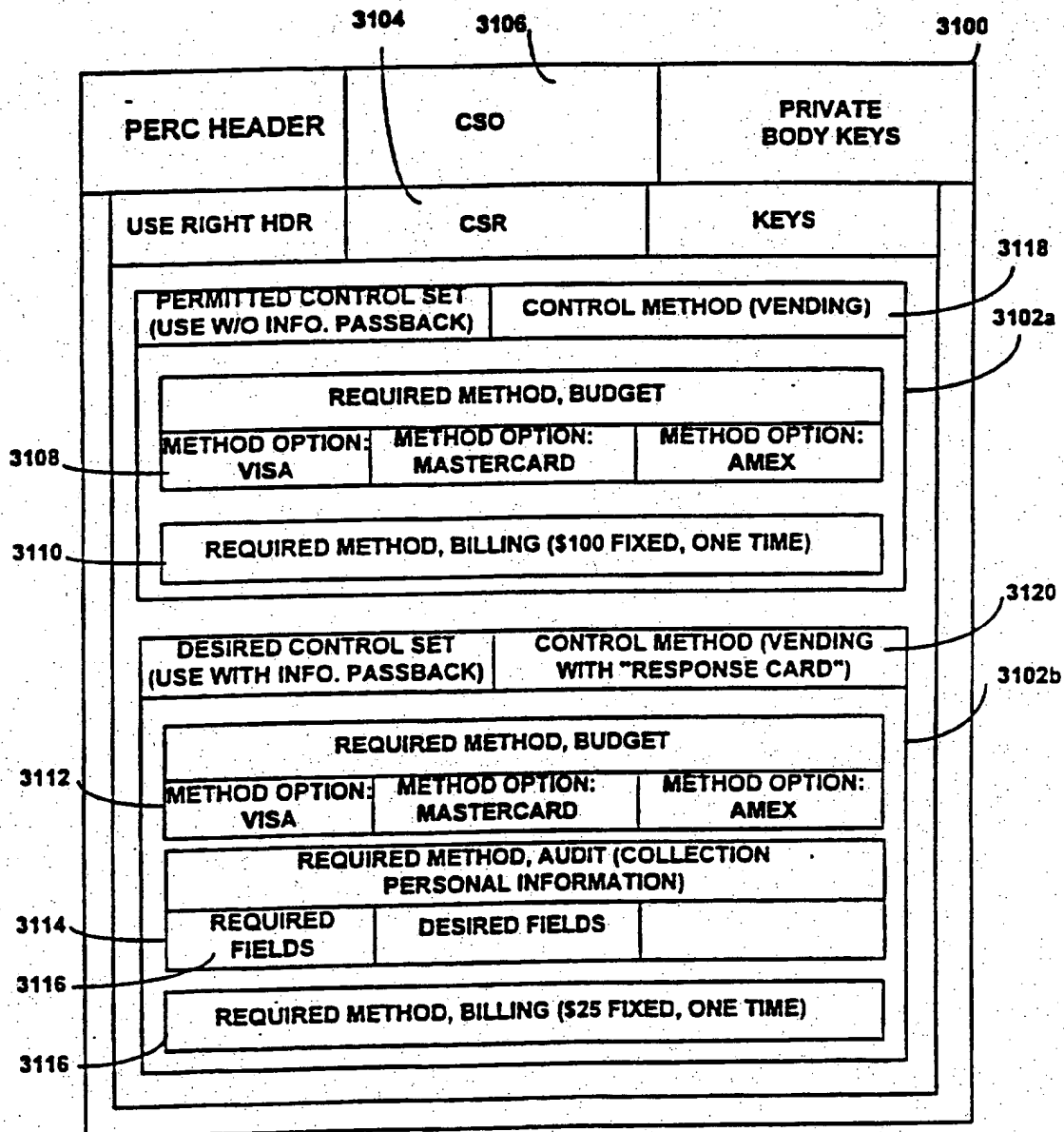


FIG. 75B

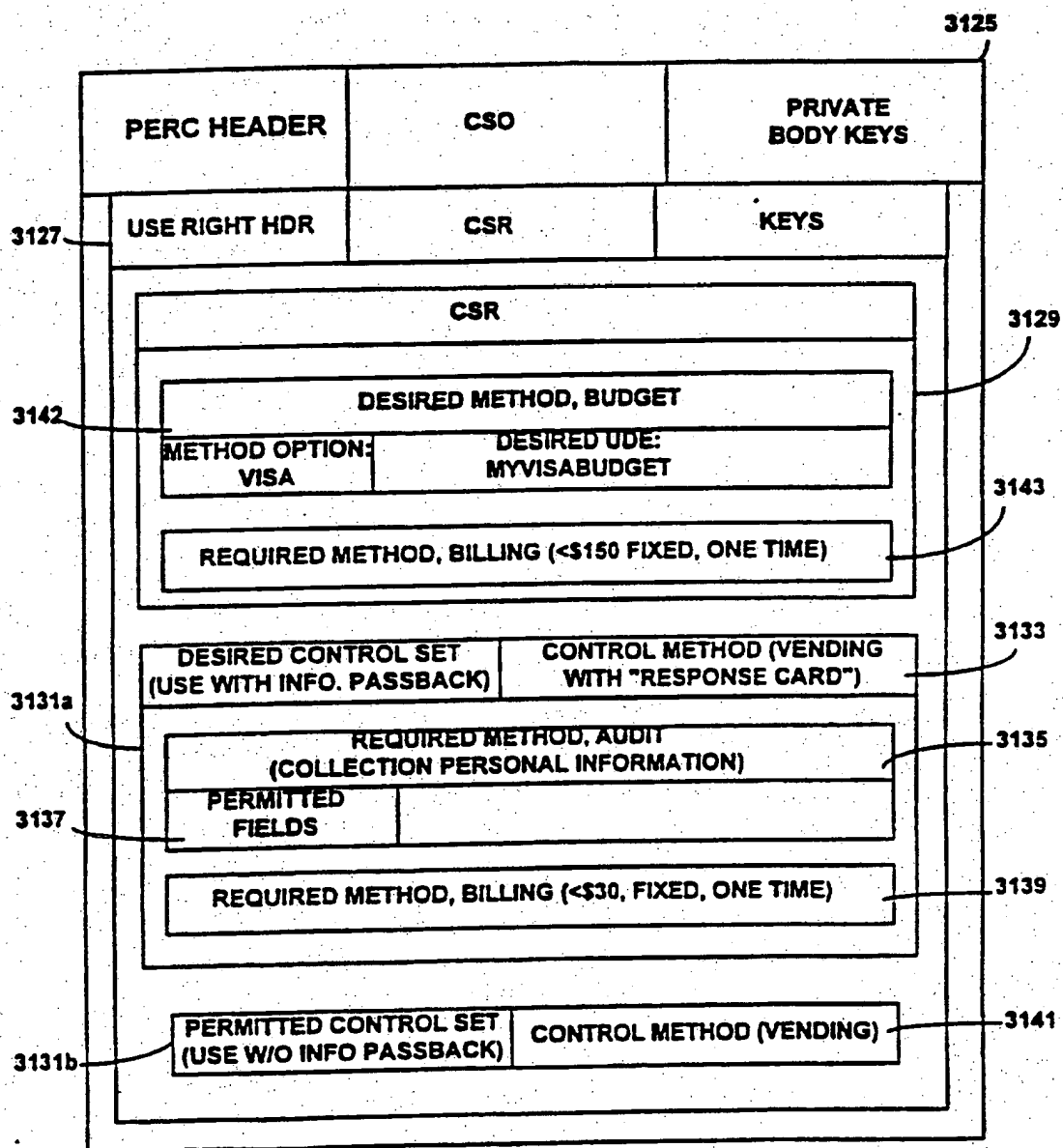


FIG. 75C

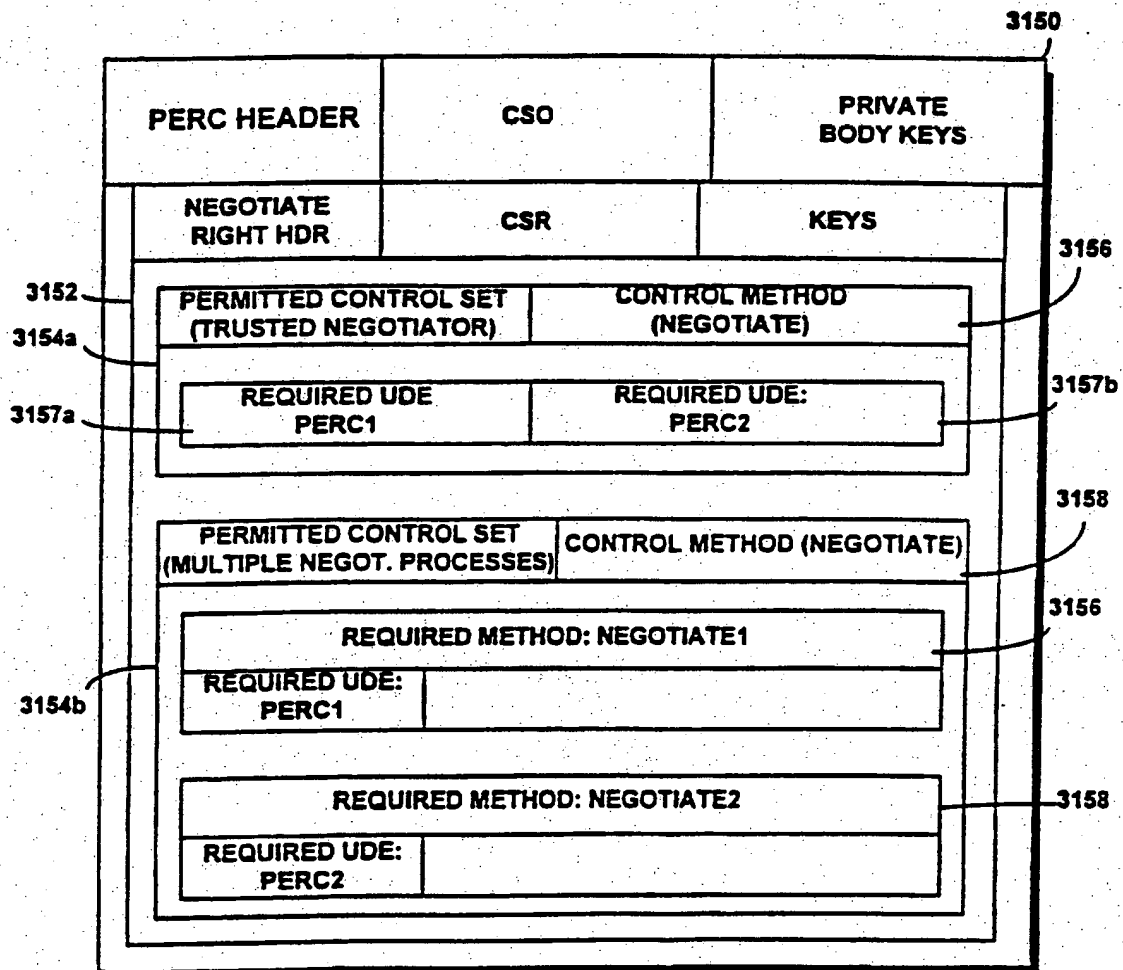




FIG. 75D

<b>URT HEADER</b>		<b>CSO</b>	<b>DIGITAL SIGNATURE</b>
<b>USE RIGHT HDR</b>		<b>CSR</b>	
<b>CONTROL SET(USE WITH INFO. PASSBACK)</b>		<b>CONTROL METHOD(VENDING WITH "RESPONSE CARD")</b>	
<b>REQUIRED METHOD, BUDGET</b>			
<b>METHOD OPTION:</b> VISA		<b>DESIRED UDE:</b> MYVISABUDGET	
<b>REQUIRED METHOD, AUDIT (COLLECTION PERSONAL INFORMATION)</b>			
<b>PERMITTED FIELDS</b>			
<b>REQUIRED METHOD, BILLING(\$25, FIXED, ONE TIME)</b>			

3160

3162

3164

3166

3170

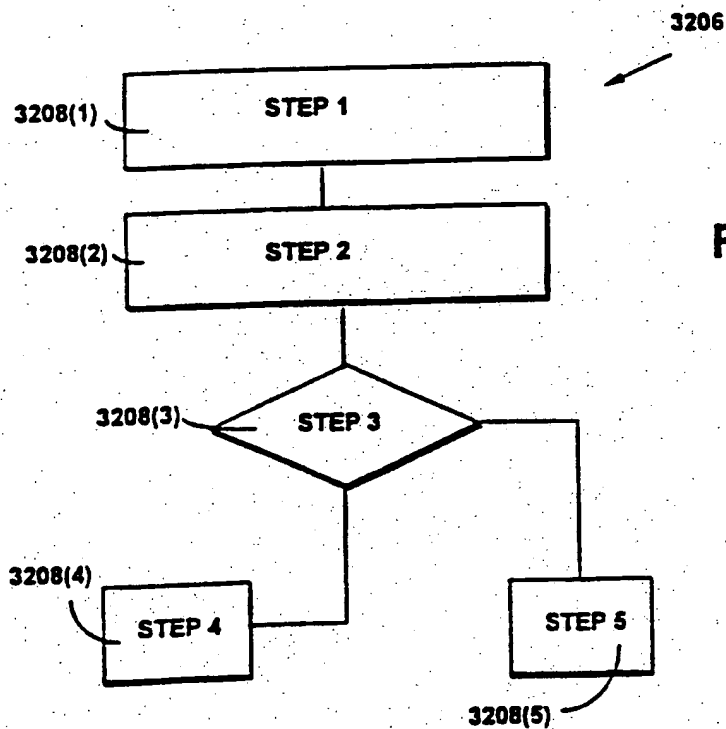
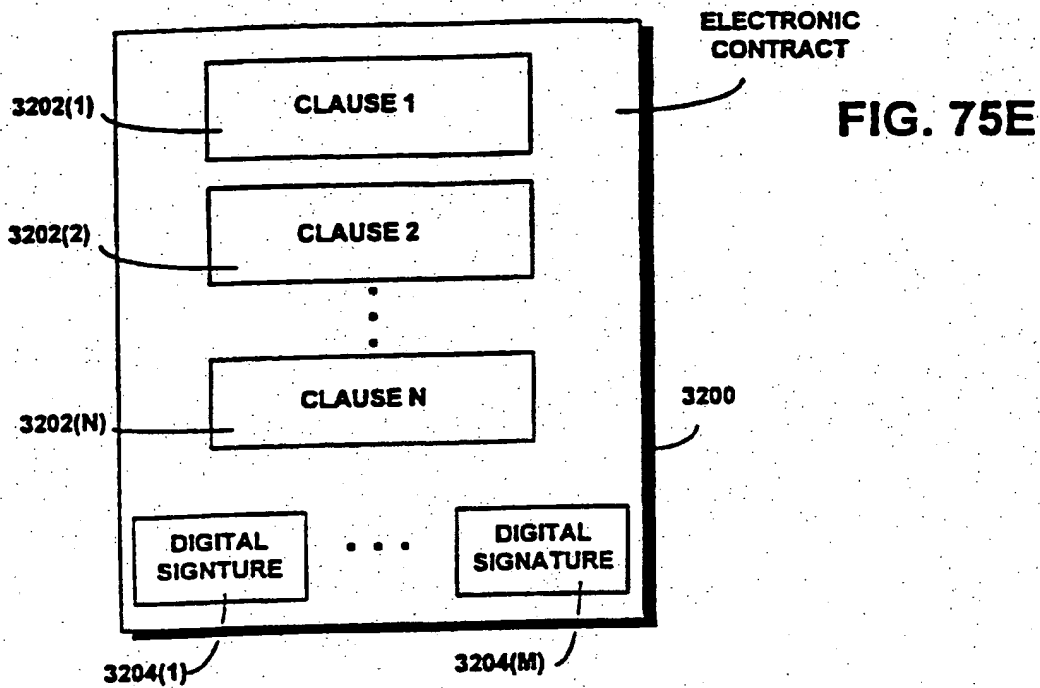


FIG. 76A

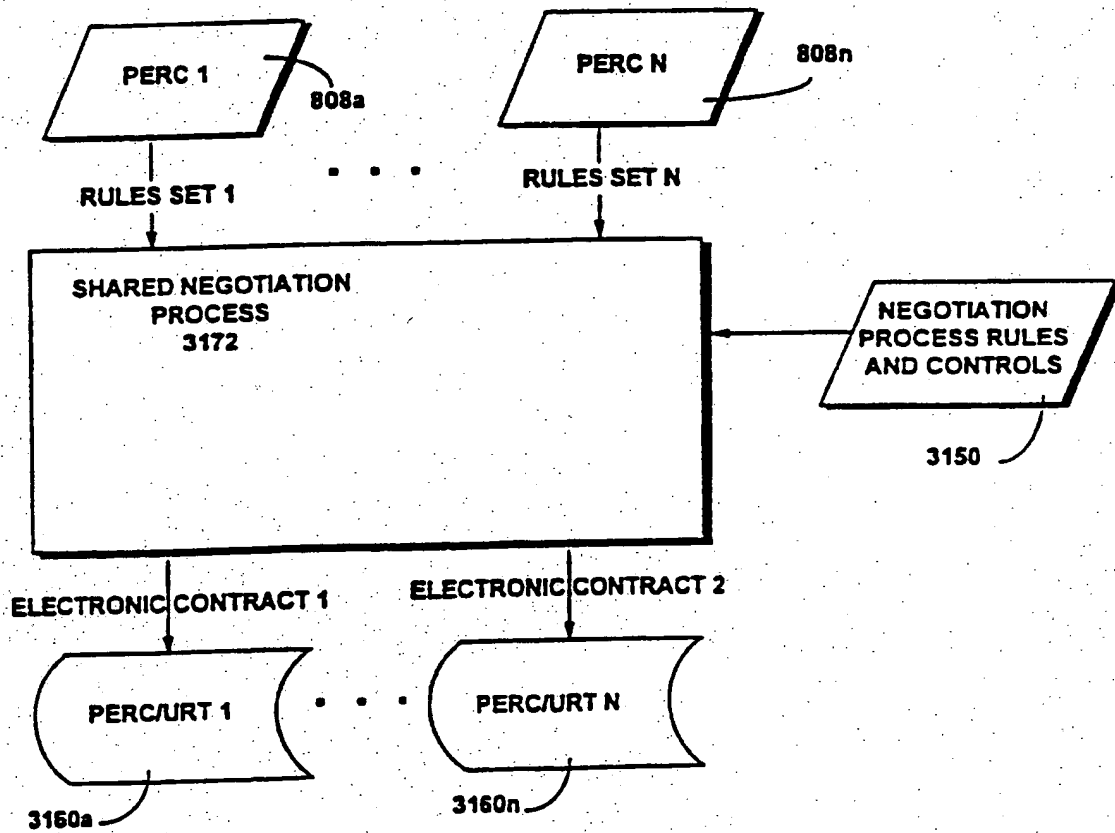


FIG. 76B

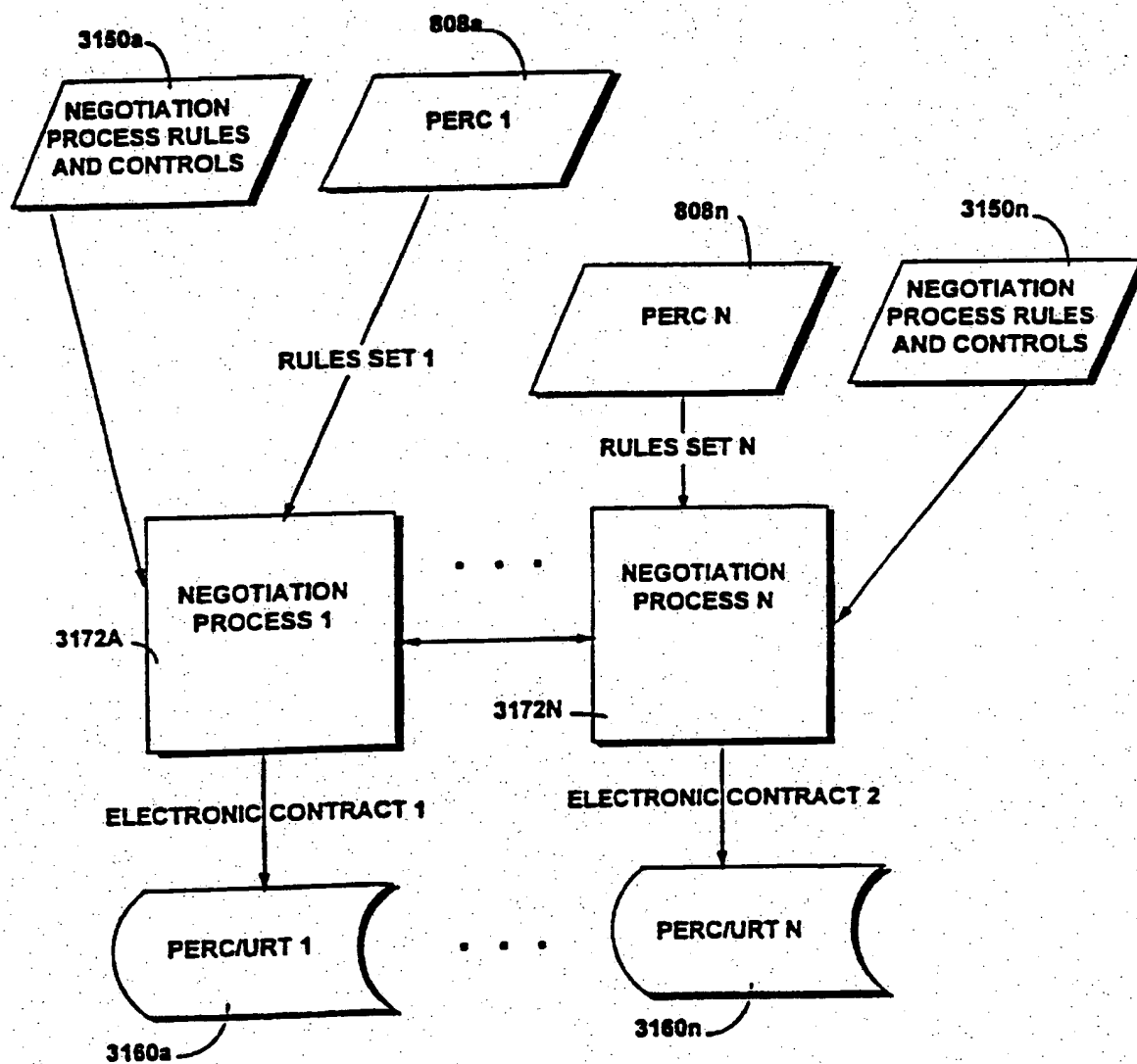
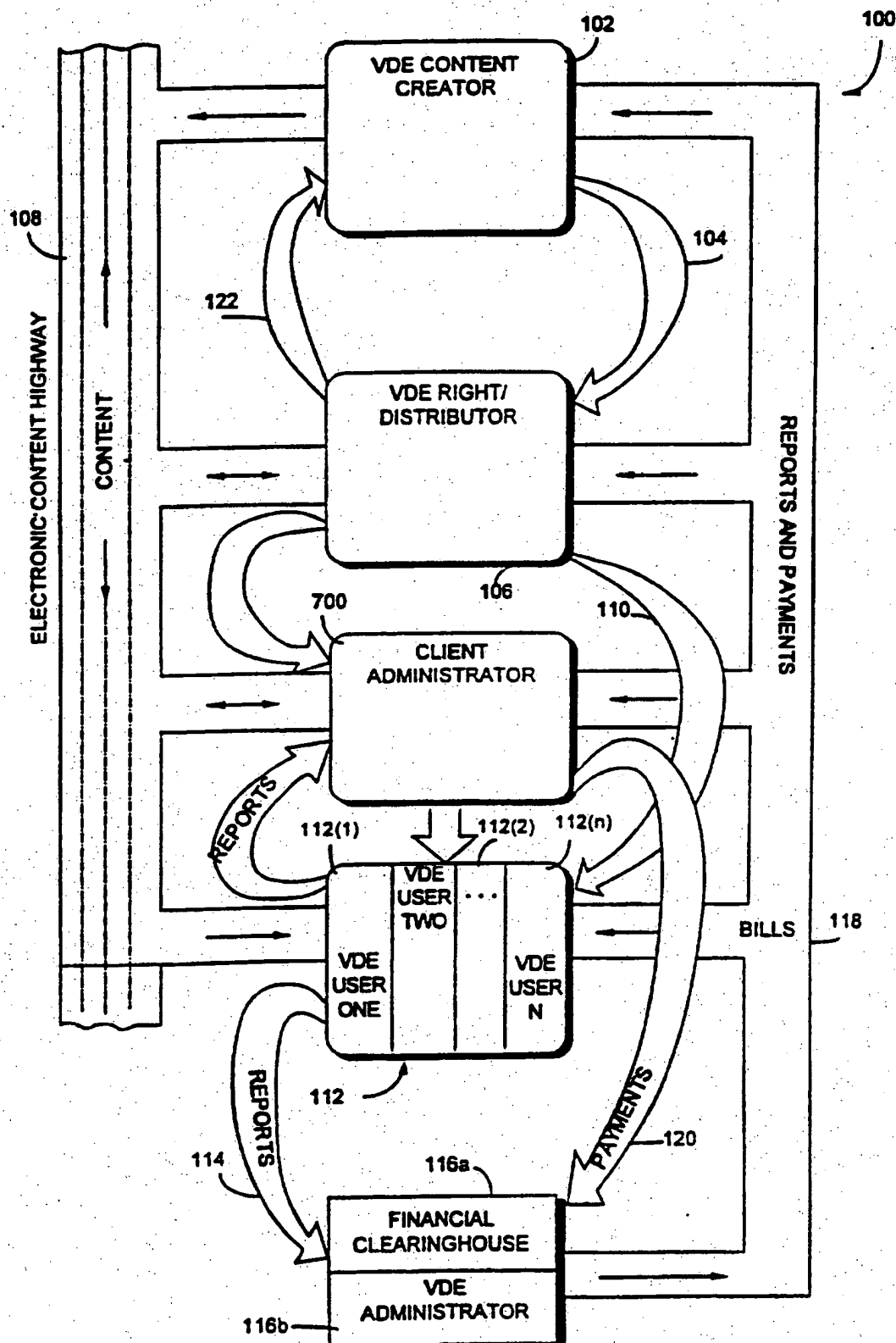


FIG. 77



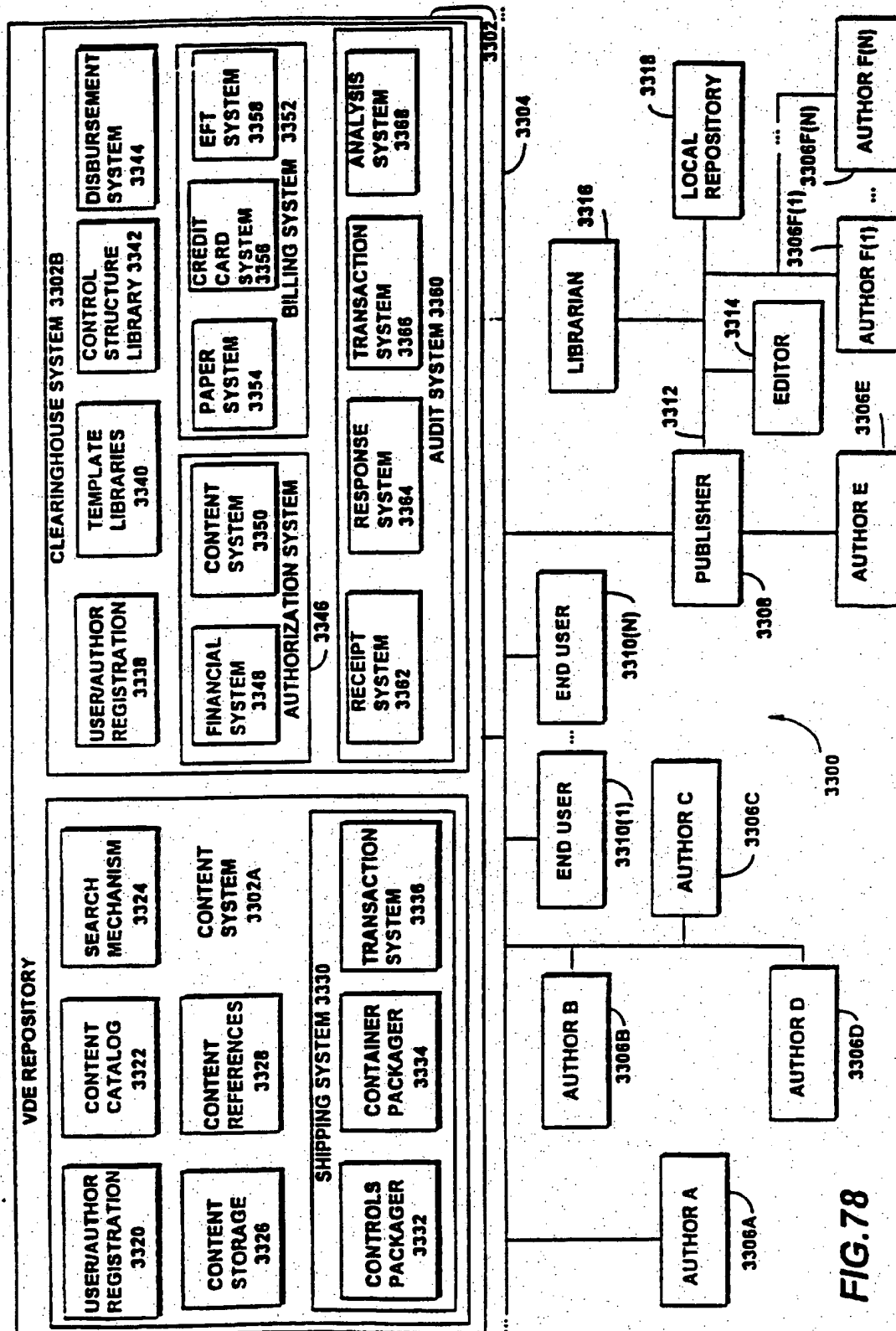
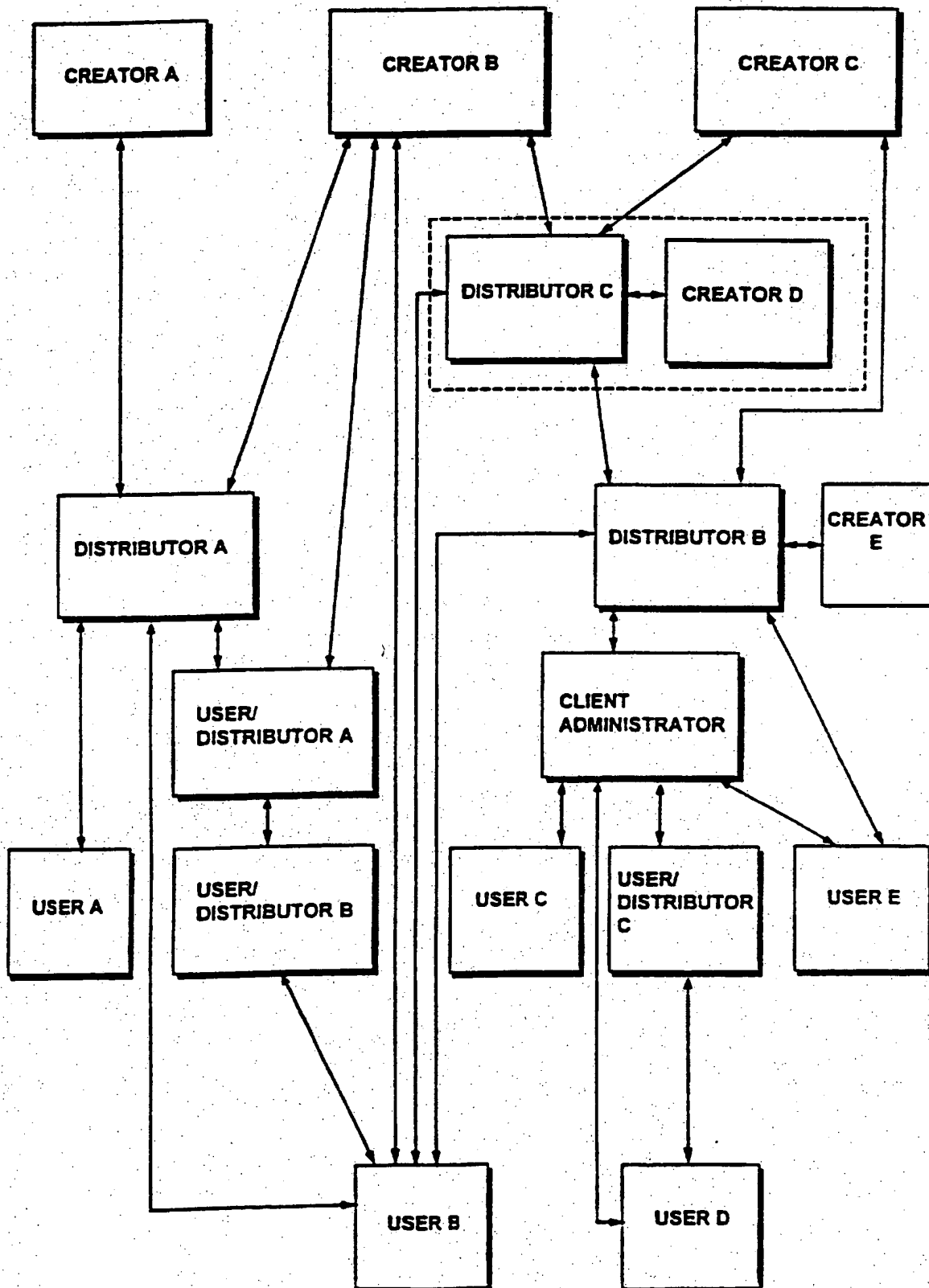
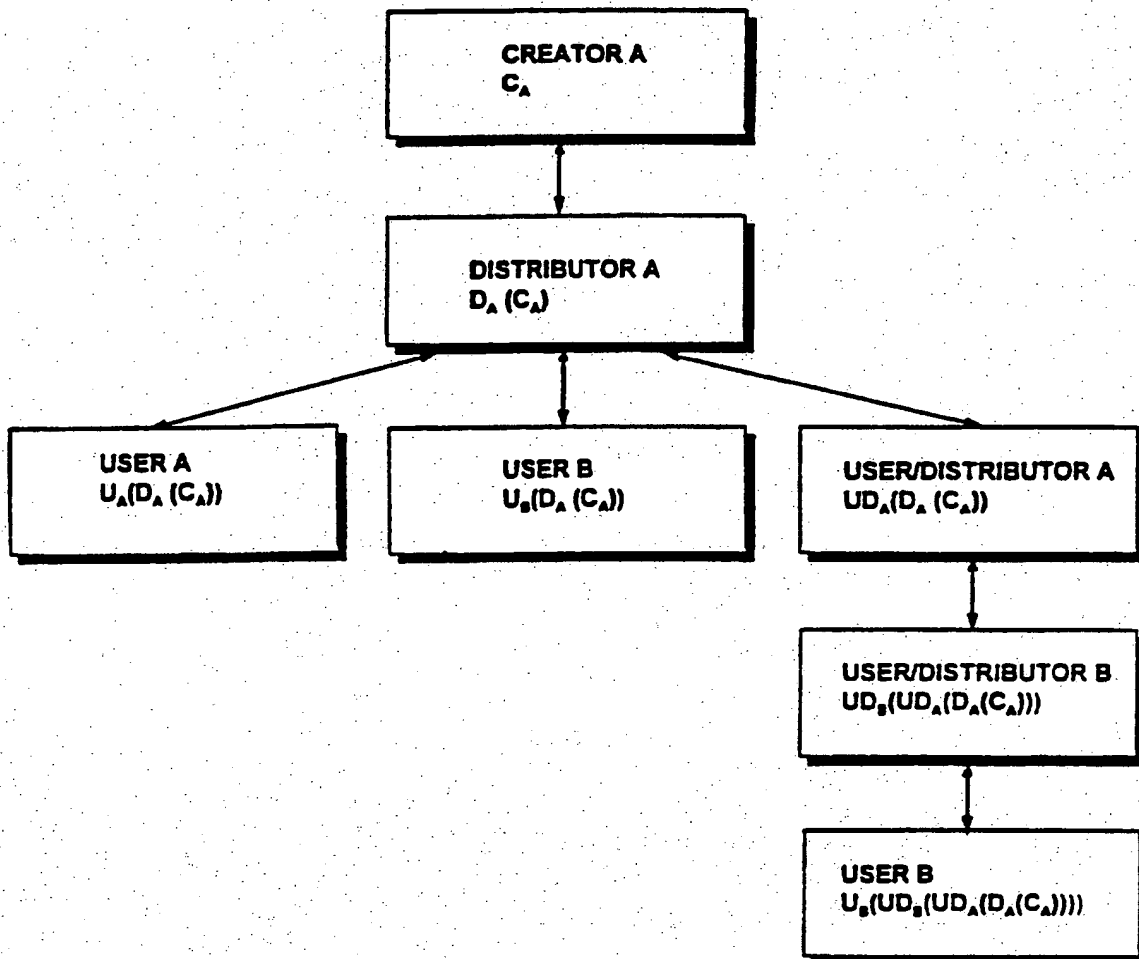


FIG. 78

FIG. 79



**FIG. 80**



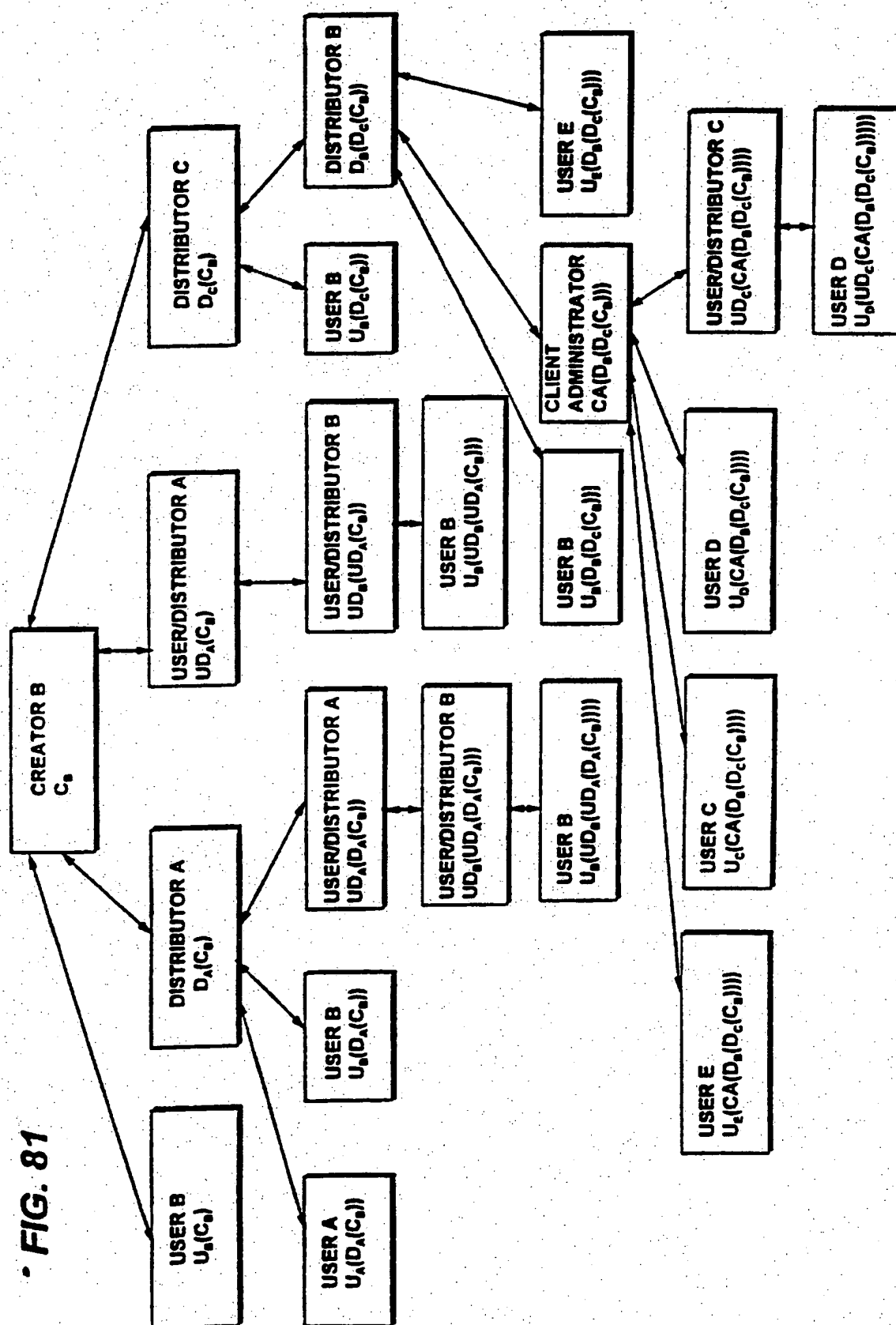


FIG. 82

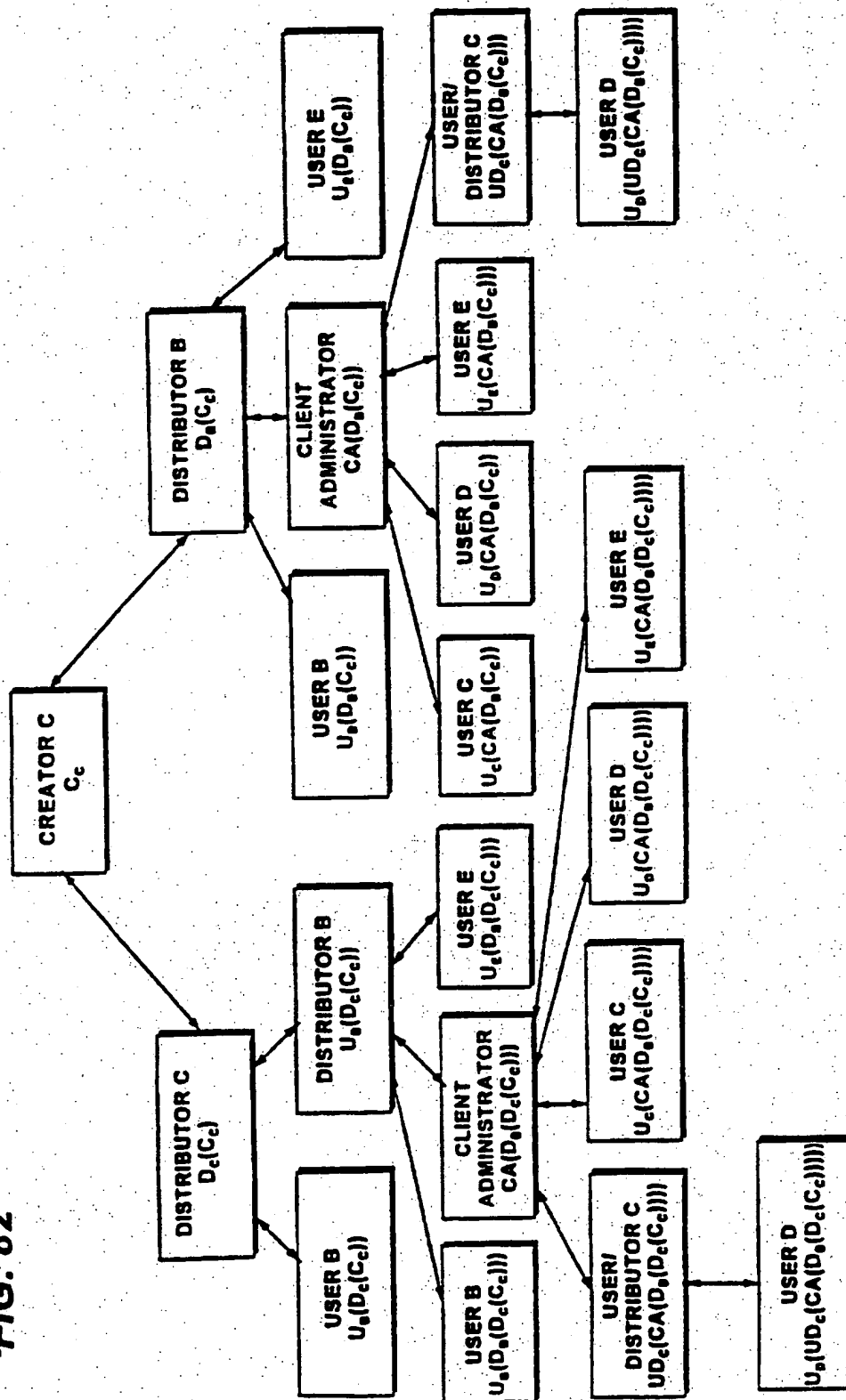


FIG. 83

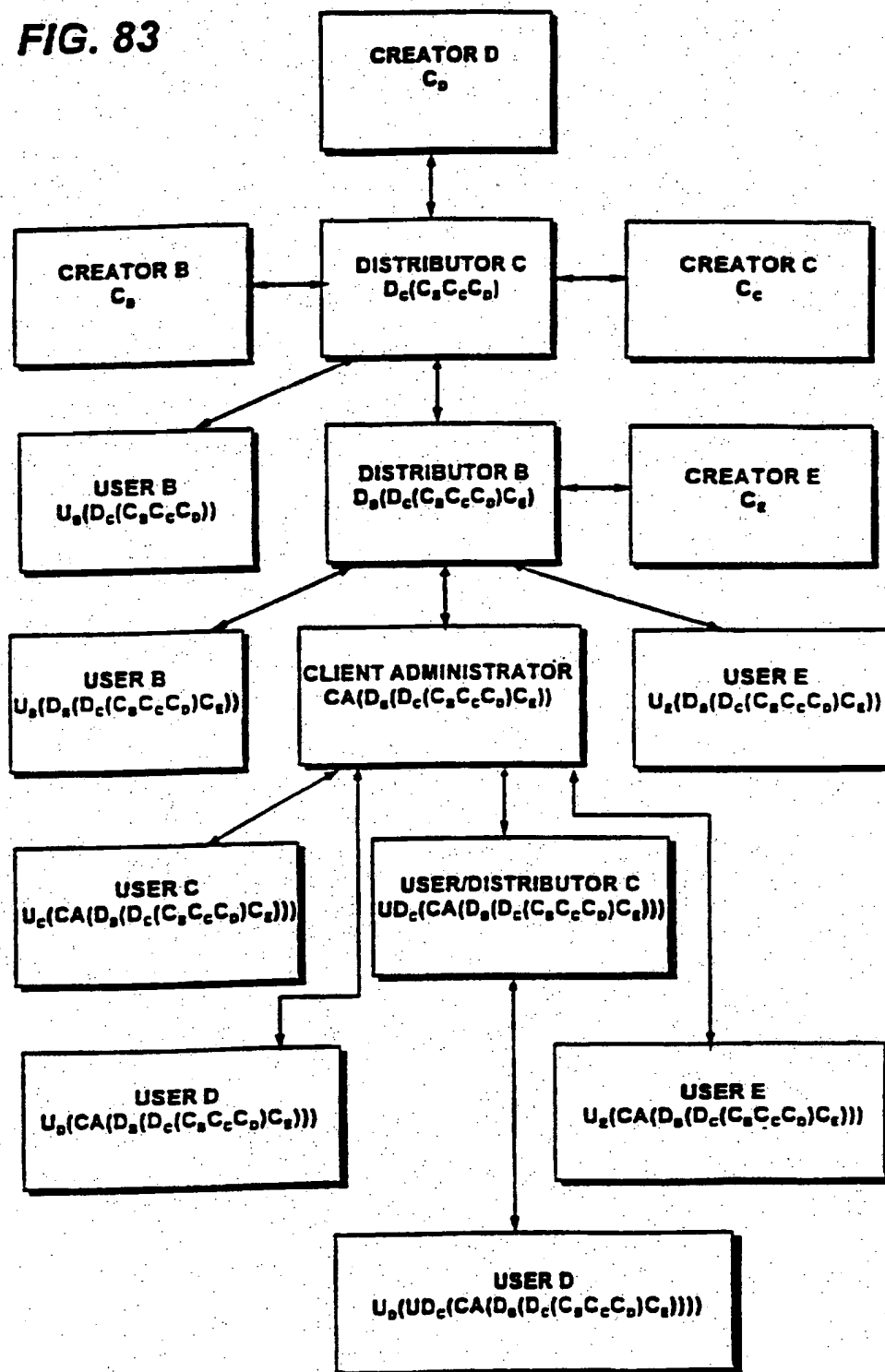


FIG. 84

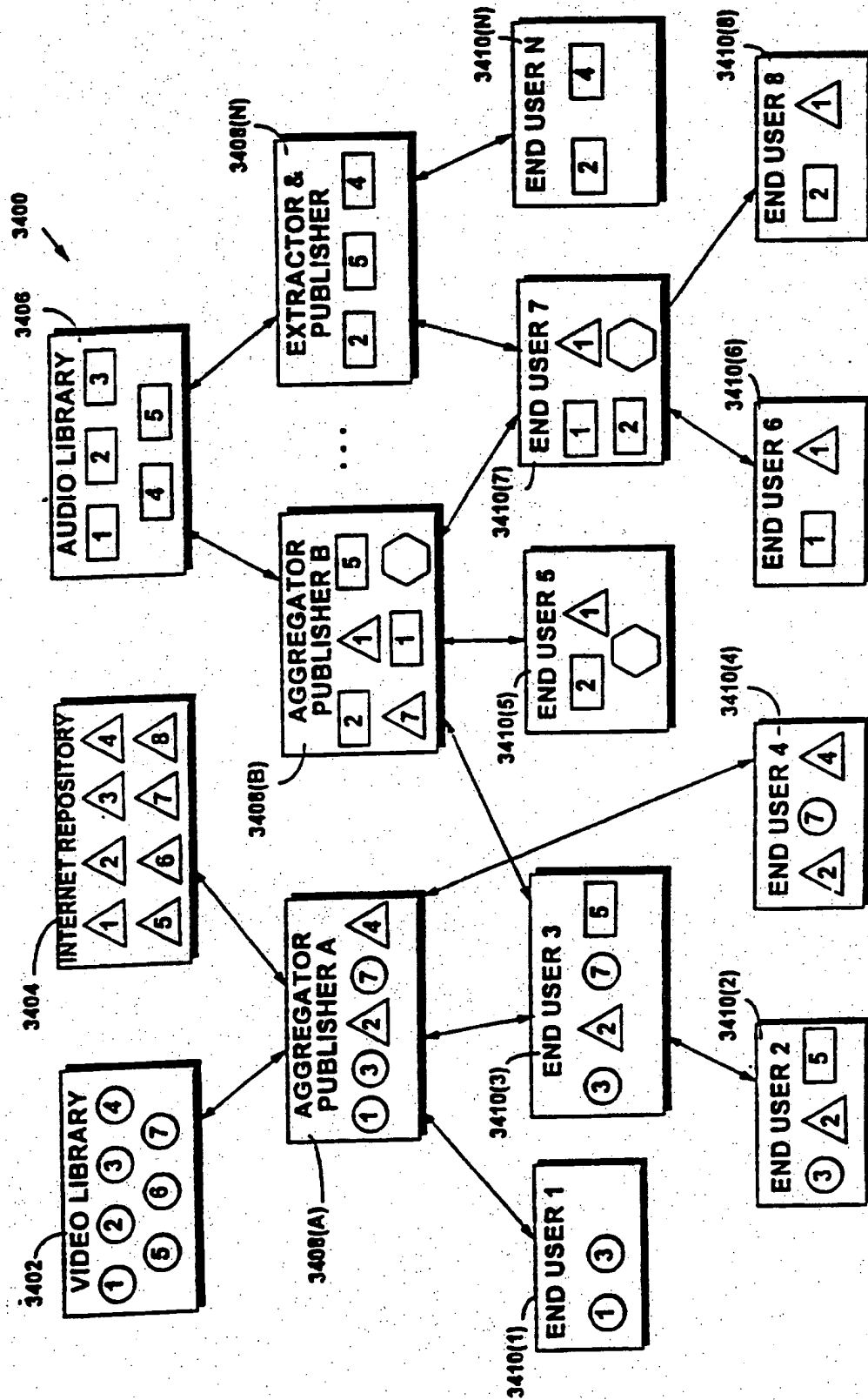
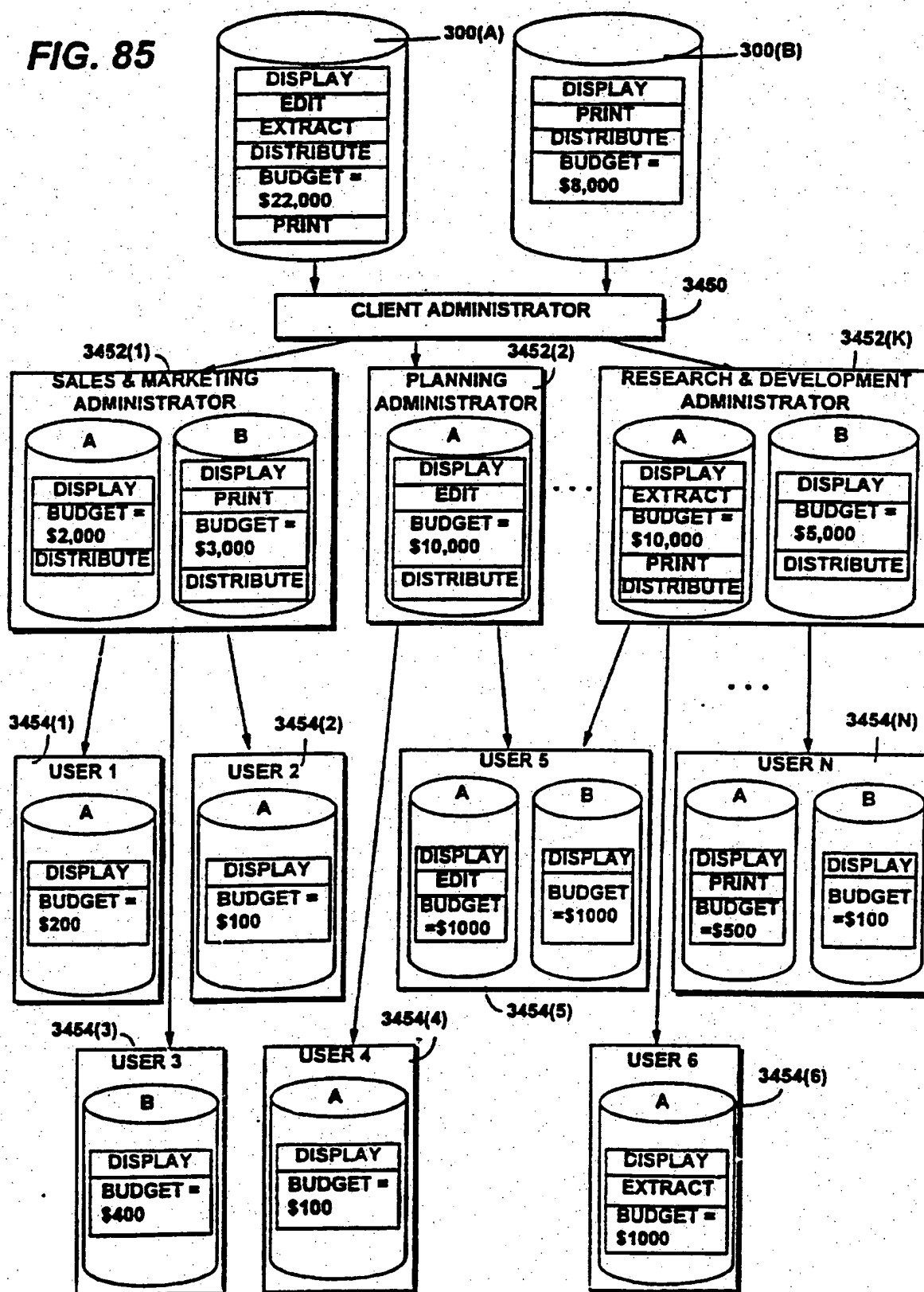
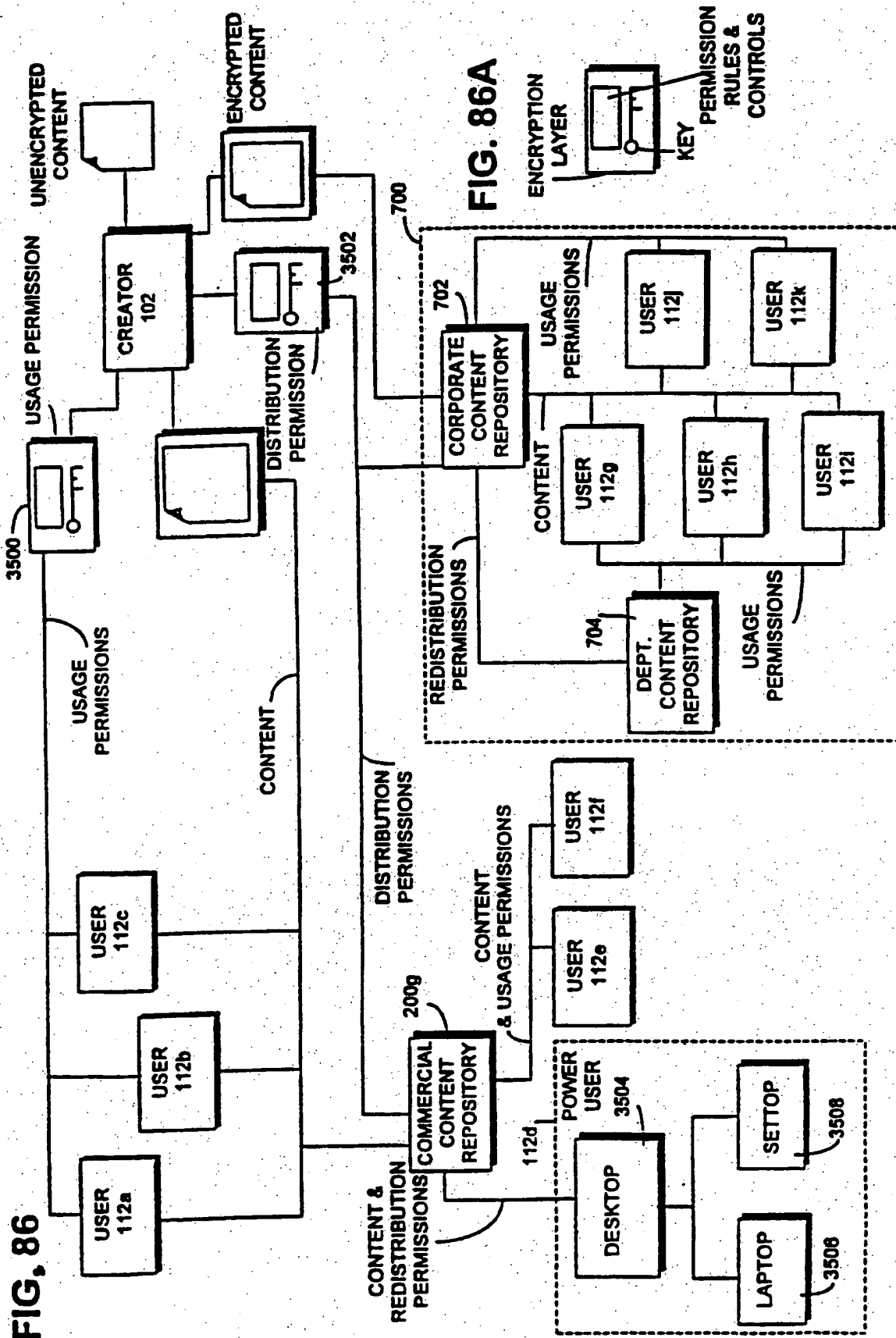


FIG. 85





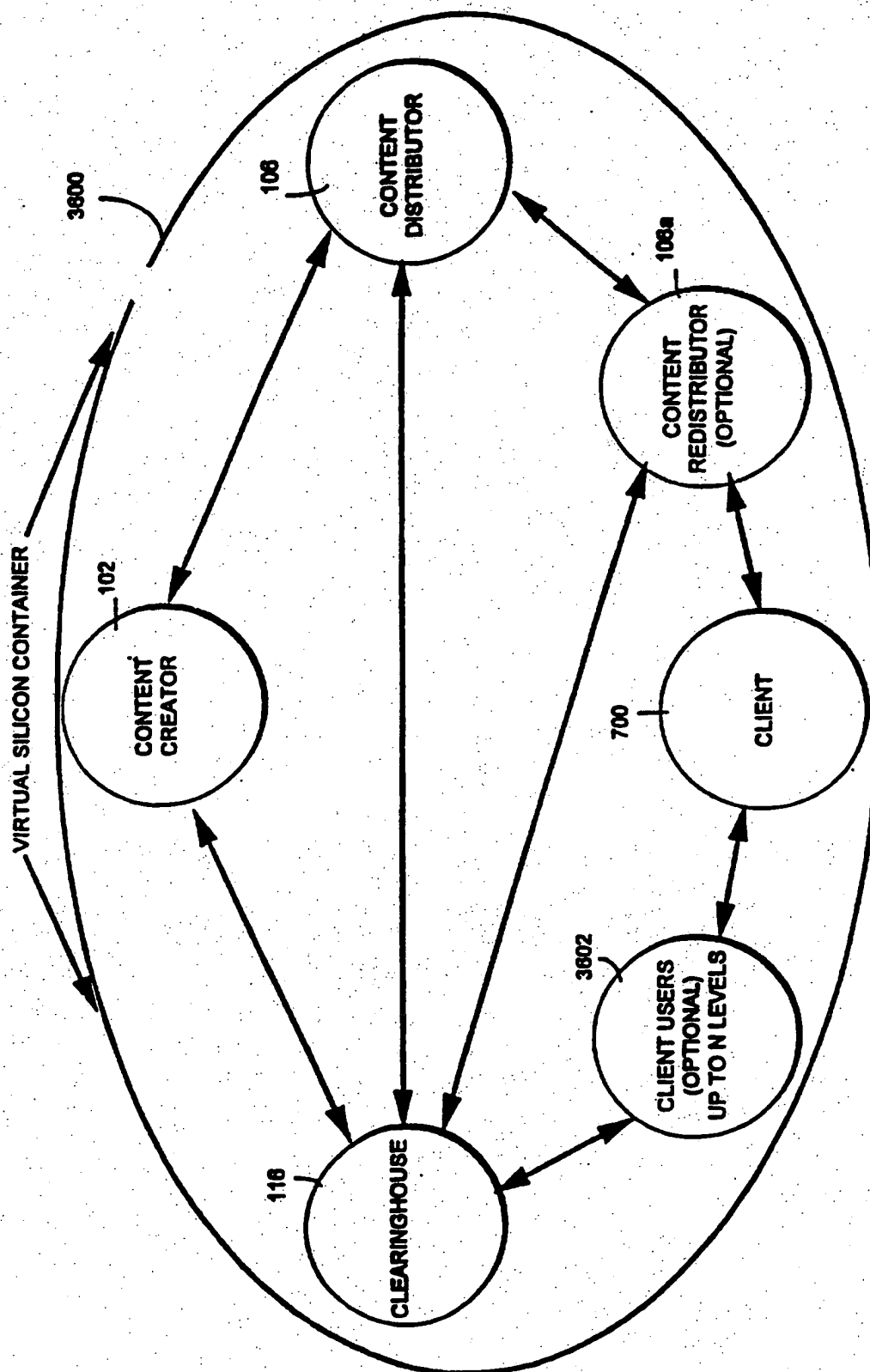


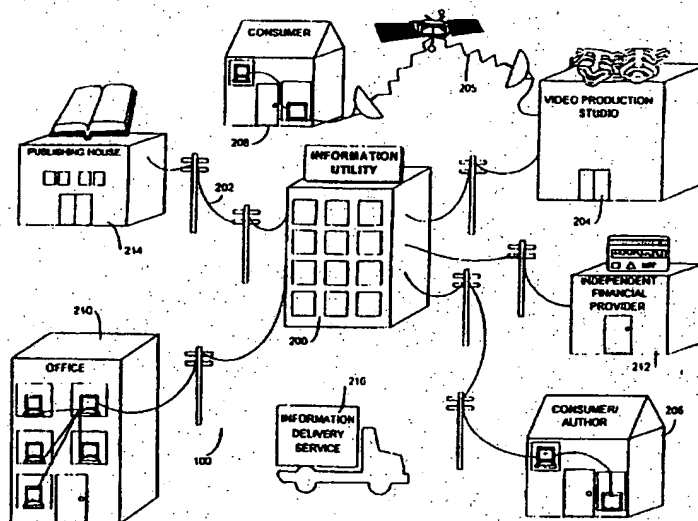
FIG. 87



INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 6 : G06F 1/00, 17/60		A3	(11) International Publication Number: <b>WO 96/27155</b>
			(43) International Publication Date: 6 September 1996 (06.09.96)
(21) International Application Number: PCT/US96/02303		(81) Designated States: AL, AM, AT, AU, AZ, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, UZ, VN, ARIPO patent (KE, LS, MW, SD, SZ, UG), Eurasian patent (AZ, BY, KG, KZ, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).	
(22) International Filing Date: 13 February 1996 (13.02.96)			
(30) Priority Data: 08/388,107 13 February 1995 (13.02.95) US			
(71) Applicant: ELECTRONIC PUBLISHING RESOURCES, INC. [US/US]; 5203 Battery Lane, Bethesda, MD 20814 (US).			
(72) Inventors: GINTER, Karl, L.; 10404 43rd Avenue, Beltsville, MD 20705 (US). SHEAR, Victor, H.; 5203 Battery Lane, Bethesda, MD 20814 (US). SPAHN, Francis, J.; 2410 Edwards Avenue, El Cerrito, CA 94530 (US). VAN WIE, David, M.; 1250 Lakeside Drive, Sunnyvale, CA 94086 (US).		<p><b>Published</b>  <i>With international search report.          Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i></p>	
(74) Agent: FARIS, Robert, W.; Nixon & Vanderhye P.C., 1100 North Glebe Road, Arlington, VA 22201-4714 (US).		(88) Date of publication of the international search report: 19 June 1997 (19.06.97)	

(54) Title: SYSTEMS AND METHODS FOR SECURE TRANSACTION MANAGEMENT AND ELECTRONIC RIGHTS PROTECTION



(57) Abstract

The present invention provides systems and methods for electronic commerce including secure transaction management and electronic rights protection. Electronic appliances such as computers employed in accordance with the present invention help to ensure that information is accessed and used only in authorized ways, and maintain the integrity, availability, and/or confidentiality of the information. Secure subsystems used with such electronic appliances provide a distributed virtual distribution environment (VDE) that may enforce a secure chain of handling and control, for example, to control and/or meter or otherwise monitor use of electronically stored or disseminated information. Such a virtual distribution environment may be used to protect rights of various participants in electronic commerce and other electronic or electronic-facilitated transactions. Secure distributed and other operating system environments and architectures, employing, for example, secure semiconductor processing arrangements that may establish secure, protected environments at each node. These techniques may be used to support an end-to-end electronic information distribution capability that may be used, for example, utilizing the "electronic highway".



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GA	Gabon			VN	Viet Nam

## INTERNATIONAL SEARCH REPORT

Internat'l Application No

PCT/US 96/02303

A. CLASSIFICATION OF SUBJECT MATTER  
IPC 6 G06F1/00 G06F17/60

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 G06F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
	- / - -	

☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

\* Special categories of cited documents:

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- \*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the international filing date but later than the priority date claimed

- \*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- \*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- \*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
- \*Z\* document member of the same patent family

Date of the actual completion of the international search

18 April 1997

Date of mailing of the international search report

14. 05. 97

Name and mailing address of the ISA

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Fax (+ 31-70) 340-3016

Authorized officer

Powell, D

# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/US 96/02303

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 90 02382 A (INDATA CORP) 8 March 1990	1,2,5,6, 23,24, 62-65, 68,69, 72-77, 99-102, 133-138, 147-152, 155-158, 199,200
Y	see abstract; figures 2,15 see page 18, last paragraph - page 21, paragraph 2	21,22, 29,30, 103-108, 127-130, 223,224, 233,234, 237,238, 241-244, 504,506
A	see page 23, last paragraph - page 24, paragraph 1	61,143, 144,207, 208,245, 246, 487-500, 507-509
	---	-/--

# INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 96/02303

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 319 705 A (HALTER BERNARD J ET AL) 7 June 1994	7-12, 17-20, 72-77, 133,134, 147-152, 155-158, 265-268, 298,300, 363,396
Y	see abstract; figures 2,4,12	21,22, 109,110, 115, 203-206, 213,214, 223,224, 237,238, 265, 302-305, 394,395
A	see column 4, line 33 - column 6, line 24 see column 24, line 33 - column 25, line 13	25,26, 31-38, 127-132, 207,208, 370-374, 381-384, 404
	---	
	-/--	

## INTERNATIONAL SEARCH REPORT

Internat. Application No.

PCT/US 96/02303

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	TRANSACTIONS OF THE INSTITUTE OF ELECTRONICS, INFORMATION AND COMMUNICATION ENGINEERS OF JAPAN, vol. E73, no. 7, July 1990, TOKYO, JP, pages 1133-1146, XP000159229 R.MORI ET AL: "Superdistribution: The Concept and the Architecture"	72-77, 99-102, 127-134
Y		29,30, 103-108, 127-130, 233,234, 241-244, 504,506
A	see abstract; figure 1 see page 1134, left-hand column, line 25 - page 1135, right-hand column, line 27	
X	--- EP 0 128 672 A (GALE IRA DENNIS) 19 December 1984 see abstract; figure 1 see page 11, line 1 - line 18	31-38, 153,154, 219,220, 231,232, 370-374, 381-384, 494-497, 501-503, 511,512
A		78,79, 139-142
X	--- US 4 672 572 A (ALSBERG PETER) 9 June 1987 see abstract; figures 1,2,5,8	80,81, 197,525
Y		83,84
A	see column 2, line 9 - column 3, line 26	109,110, 115, 302-305, 394,395
Y	--- EP 0 565 314 A (FISCHER ADDISON M) 13 October 1993 see abstract --- -/--	245,246, 253,254
		243,265

# INTERNATIONAL SEARCH REPORT

Internat'l Application No.

PCT/US 96/02303

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 4 799 156 A (SHAVIT EYAL ET AL) 17 January 1989  see abstract; figure 2 see column 7, line 47 - column 8, line 54 see column 9, line 7 - column 11, line 35	42-44, 203-206, 213,214
A		153,154, 207,208, 225-228, 370-374, 381-384, 494-497, 501-503
Y	--- MAPPING NEW APPLICATIONS ONTO NEW TECHNOLOGIES, ZURICH, MAR. 8 - 10, 1988, no. -, 8 March 1988, PLATTNER B;GUNZBURGER P, pages 45-52, XP000215989 SIUDA K: "SECURITY SERVICES IN TELECOMMUNICATIONS NETWORKS" see the whole document	42-44
A		31-38, 55-58, 95,153, 154,231, 232
Y	--- EP 0 399 822 A (HEWLETT PACKARD CO) 28 November 1990 see the whole document	87-89
Y	--- GB 2 264 796 A (IBM) 8 September 1993 see the whole document	87-89
A	--- WO 92 22870 A (ICL DATA AB) 23 December 1992  see the whole document	93-98, 277-280, 306-318, 342-349, 375-379, 385, 387-393
A	--- US 5 343 527 A (MOORE JAMES W) 30 August 1994  see the whole document	93-98, 277-280, 306-318, 342-349, 375-379, 385, 387-393
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3

# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/US 96/02303

## C(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 0 421 409 A (IBM) 10 April 1991  see the whole document ---	225-228, 245,246, 253,254
A	US 5 103 476 A (WAITE DAVID P ET AL) 7 April 1992 see the whole document ---	319, 321-340
A	US 5 111 390 A (KETCHAM LARRY R) 5 May 1992 see the whole document ---	319, 321-340
A	US 4 823 264 A (DEMING GILBERT R) 18 April 1989 ---	
A	IBM TECHNICAL DISCLOSURE BULLETIN, vol. 37, no. 3, 1 March 1994, pages 413-417, XP000441522 "MULTIMEDIA MIXED OBJECT ENVELOPES SUPPORTING A GRADUATED FEE SCHEME VIA ENCRYPTION" ---	
A	US 5 224 163 A (GASSER MORRIE ET AL) 29 June 1993 ---	
A	WO 94 06103 A (HNC INC) 17 March 1994 ---	
A	IBM TECHNICAL DISCLOSURE BULLETIN, vol. 37, no. 4B, 1 April 1994, pages 523-525, XP000451335 "TRANSFORMER RULES STRATEGY FOR SOFTWARE DISTRIBUTION MECHANISM-SUPPORT PRODUCTS" ---	
A	WO 94 03859 A (INT STANDARD ELECTRIC CORP) 17 February 1994 -----	

# INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 96/ 02303

## Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see annexed sheets.

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☒ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:  
  
Inventions: 3, 6,7,9,10,24 and 29
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.



# INTERNATIONAL SEARCH REPORT

(International Application No. PCT/US 96/ 02303)

FURTHER INFORMATION CONTINUED FROM PCT/ISA/210

The following (groups of) inventions have been identified:

Invention	Claims	Subject matter
1.	1-12,17-26,29,30,61-65,68,69,72-77,99-108,127-130,133-138,147-152,155-158,199,200,219-222,233,234,243,244,265-268,294-301,363,364,396,404,504,506	Solving problems related to: Distributing electronic information to a rightful destination using a different virtual distribution environment node (than either supplier or destination) to process the control information associated with the said digital information (cf. either of documents D1 and D2)
2.	13-16	Solving problems related to: Automating electronic processes.
3.	31-39,42-45,55-58,153,154,203-208,213-218,223-228,231,232,237,238,241,242,370-374,381-384,487-489,500,505,507-512	Solving problems related to: Electronic commerce.
4.	40,41,46-54,259-262,402	Solving problems related to: Identification of principals or principals' properties.
5.	59,60,66,67,70,71,235,236,239,240,401	Solving problems related to: Handling electronic currency.
6.	78-81,139-144,197,525	Solving problems related to: Tamper-resistant containers.
7.	82-84,109-116,127-132,273-276,302-305,394,395,494-497,501-503	Solving problems related to: Audit or administrative information.
8.	85,86	Solving problems related to: Human readable interfaces.
9.	87-92,201,202,209,210,282,283	Solving problems related to: Event or task processing.
10.	93-98,277-280,306-318,342-349,375-379,385,387-393	Solving problems related to: Checking component integrity or validity.
11.	117-122	Solving problems related to: Compromising a security system.

# INTERNATIONAL SEARCH REPORT

International Application No. PCT/US 96/02303

FURTHER INFORMATION CONTINUED FROM PCT/ISA/210

- |     |   |   |
|-----|---|---|
| 12. | 123-126                                 | Solving problems related to:<br>Electronic data fingerprinting.         |
| 13. | 159,160,194-196,400,516,<br>523,524     | Solving problems related to:<br>Secure processors.                      |
| 14. | 161-166,517                             | Solving problems related to:<br>Video controllers.                      |
| 15. | 167-172,175,176,518,519                 | Solving problems related to:<br>Network communications.                 |
| 16. | 173,174,520                             | Solving problems related to:<br>CD-ROM controllers.                     |
| 17. | 177,178,521                             | Solving problems related to:<br>Set-top controllers.                    |
| 18. | 179-185,522                             | Solving problems related to:<br>Electronic games.                       |
| 19. | 188-193                                 | Solving problems related to:<br>Multimedia communications.              |
| 20. | 198,526                                 | Solving problems related to:<br>Detection of power supply interruption. |
| 21. | 145,146                                 | Solving problems related to:<br>Bitmap data structures.                 |
| 22. | 211,212                                 | Solving problems related to:<br>Modular control structures.             |
| 23. | 229,230                                 | Solving problems related to:<br>Billing and budgeting.                  |
| 24. | 245,246,253,254,341,<br>350-353,360-362 | Solving problems related to:<br>Protected processing operations.        |
| 25. | 27,28,247-252,513-515                   | Solving problems related to:<br>Secure database management.             |
| 26. | 263,264                                 | Solving problems related to:<br>Secure electronic mail.                 |
| 27. | 269-272                                 | Solving problems related to:<br>Controlling a robot.                    |

# INTERNATIONAL SEARCH REPORT

International Application No. PCT/US 96/02303

FURTHER INFORMATION CONTINUED FROM PCT/ISA/210

- |     |                         |   |
|-----|-------------------------|---|
| 28. | 284-293,482-486         | Solving problems related to:<br>Business automation.          |
| 29. | 319,321-340             | Solving problems related to:<br>Software construction.        |
| 30. | 320,369,380             | Solving problems related to:<br>Resource management.          |
| 31. | 354-359,365-368         | Solving problems related to:<br>Combining or modifying data.  |
| 32. | 397                     | Solving problems related to:<br>Point of sale systems.        |
| 33. | 398,399,490-493,498,499 | Solving problems related to:<br>Advertising.                  |
| 34. | 403                     | Solving problems related to:<br>Renting an appliance.         |
| 35. | 255-258,281,386         | Solving problems related to:<br>Rights described in software. |

A concise analysis shows that the Special Technical Features of these 35 groups of claims, as determined by comparison with the features disclosed in either of documents D1 or D2, are not the same. A comparison of the objective problems related to these different groups of inventions, all seen in the light of the description and the drawings of the application, shows that these objective problems are all different and have no corresponding technical effect.

Consequently, the Special Technical Features of these different groups of inventions are neither the same nor corresponding as defined in Rule 13.2 PCT, 2nd sentence, and therefore the requirement of Unity of Invention (Rule 13.1, 2 PCT) has not been fulfilled.

Finally, it should be noted that searching the additional subject-matter of any of the groups of claims 2-35 would have involved a considerable additional search effort.

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